AMERICAN CINEMATOGRAPHER

The Motion Picture CAMERA Magazine

this issue

Spectroscopic Photography

Practical Side of Laboratory

Purpose of Diffusion

. . . and other features

for the amateur

Equipping Home 16mm. Laboratory

Cinemicroscopy with 16mm.

Slow Motion in Athletics

Miniature Negative and Grain

. . . and other features.

Published in Hollywood
by the
American Society of Cinematographers

September 1933

PRICE 25c

AMERICAN CINEMATOGRAPHER

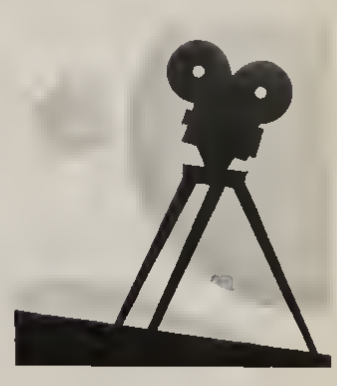
A Technical and Educational publication
of motion picture photography

Published monthly by the
AMERICAN SOCETY
OF CINEMATOGRAPHERS INC.,
Suite 1222 Guaranty Building
Hollywood California

Telephone Granite 4274

JOHN ARNOLD, President A S C
GEORGE SCHNEIDERMAN, Treasurer A S C

Volume XIII SEPTEMBER, 1933 Number 5



What to Read

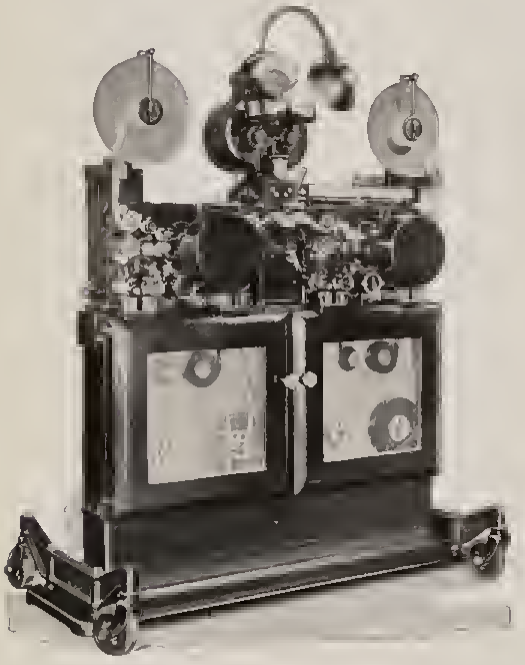
Next Month

● The Final Installment of the Emery Huse series of articles on Sensitometric Control will be given you There will be another article on filters by Hartley Harrison The History of Process Photography will be discussed by an expert Other articles of timely interest . new equipment and methods pursued by the Hollywood Cinematographers will be given you

ESTABLISHED 1918 Advertising Rates on application Subscription U S $3 00 a year Canada $3 50 a year, Foreign, $4 00 a year, single copies 25c

The Staff

M. G. M. modernizes with Bell and Howell *Automatic Sound Production Printers*



ILLUSTRATED is one of the five B & H Automatic Sound Production Printers which will equip the the Metro-Goldwyn-Mayer Culver City laboratory with the most modern printing production facilities to be had Operating 23 to 23½ hours a day, instead of the usual maximum of 20 hours, these new B & H Printers will turn out for M-G-M, in record time, millions of feet of the finest sound prints, characterized by perfect uniformity.

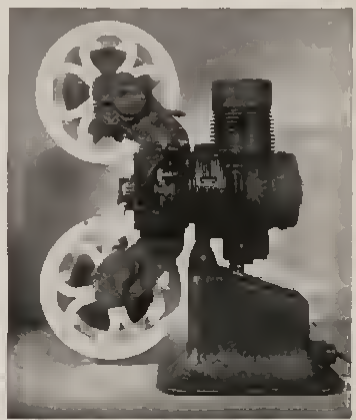
While designed for quantity production, these printers give vastly finer control of print density and quality than has hererofore been possible Sound and picture are printed at one operation under fully automatic interlocking control. The machines ate ruggedly built, yet constructed to a precision of adjustment equal to that of a fine watch.

Write today for the story of this B & H Production Printer and learn why M-G-M turned over their production job to these machines.

A New Filmo Projector for Mid-day Brilliance

Here is *realism* as you have never seen it before in personal movies —a brilliance in projection that *completes* the illusion of witnessing something that is *alive, real.* Powered with a new 750-watt, 100-volt lamp, the new Filmo JS Projector *recreates* sunshine and artificial illumination in the full richness of the original scene

Besides unequalled illuminating power and the resultant brighter pictures, the Filmo JS offers all of the modern refinements of the famed Filmo JL Projector It is fully gear-driven, re-winds automatically at the touch of a lever, and with a score of other refinements frees the showing of your movies of all fuss and bother.



Filmo JS 750 watt Projector $85.00

BELL & HOWELL

1848 Larchmont Ave., Chicago; 11 West 42nd St., New York, 716 North La Brea Ave., Hollywood, 320 Regent St, London (B & H Co., Ltd.) Established 1907

NRA Member

FILMO

Personal Movie Cameras and Projectors

PROFESSIONAL RESULTS WITH AMATEUR EASE

MEMBERS

Abel David
Allen Paul H
Arnold John

Bell Chas E
Benoit Georges
Boyle, John W
Brown, Jas S, Jr.

Chancellor Philip M
Clark Daniel B
Clarke Chas G
Cowling, H T

Daniels Wm H
Davis Chas J
DeVinna Clyde
DeVol Norman
Dored John
Dubray Jos A
Dupar, E B
Dupont, Max
Dyer Edwin L
Dyer Elmer G

Edeson Arthur

Fildew William
Fisher, Ross G
Folsey, Geo J Jr
Freund Karl

Gaudio, Gaetano
Gilks, Alfred
Good, Frank B

Haller Ernest
Herbert Chas W
Hilburn Percy
Horne Pliny
Hyer Wm C

Jackman Dr Floyd
Jackman Fred
June Ray
Jansen W H

Kershner Glenn
Koenekamp H F

Lang Chas B Jr
Lockwood J R
Lundin Walter

MacWilliams, Glen
Marsh Oliver
Marta Jack A
Miller Arthur
Milner Victor
Mohr Hal

O'Connell L Wm

Palmer, Ernest
Perry, Harry
Polito, Sol
Pomeroy, Roy
Powers, Len

Rees Wm A
Roos Len H
Rose Jackson J
Rosher, Chas
Rosson Harold

Schneiderman Geo
Schoenbaum Chas
Scott, Homer
Seitz John F.
Sharp Henry
Shearer, Douglas G
Sintzenich, Harold
Smith, Jack
Snyder, Edward J
Stengler, Mack
Struss Karl
Stull, Wm
Stumar Charles

Tappenbeck, Hatto

Van Buren Ned
Van Trees, James
Varges, Ariel

Wagner Sidney C
Walker, Joseph
Walker, Vernon L
Warrenton Gilbert
Wenstrom Harold
Westerberg Fred
Wilky, L Guy
Wrigley, Dewey
Wyckoff, Alvin

Zucker, Frank C

ASSOCIATE MEMBERS

Mr Emery Huse
Mr Fred Gage
Dr W B Rayton
Dr C E K Mees
Dr Lloyd A Jones
Dr V B Sease
Dr L M Dieterich
Dr J S Watson, Jr.
Dr Herbert Meyer

***Membership by Invitation Only.**

◆

RESEARCH COMMITTEE
Victor Milner Arthur Miller William Stull
Dr Herbert Meyer John Arnold John F
Seitz Emery Huse Dr L M Dieterich

SOCIETY OF AMERICAN CINEMATOGRAPHERS

OFFICERS

JOHN ARNOLD	President
VICTOR MILNER	First Vice-President
CHARLES G CLARKE	Second-Vice-President
ELMER G DYER	Third Vice-President
GEORGE SCHNEIDERMAN	Treasurer
WILLIAM STULL	Secretary

BOARD OF GOVERNORS

John Arnold — John W Boyle
Charles G Clarke — Daniel B Clark
Elmer Dyer — Alfred Gilks
Frank Good — Fred Jackman
Charles B Lang Jr — Victor Milner
Arthur Miller — Hal Mohr
George Schneiderman — John F Seitz
William Stull

PAST PRESIDENTS

Philip E Rosen — Hal Mohr
Gaetano Gaudio — Homer Scott
James Van Trees — John F Seitz
John W Boyle — Daniel B Clark
Fred W Jackman — Arthur Webb, General Counsel

HONORARY MEMBER
Mr Albert S Howell Chicago

PUBLIC RELATIONS COMMITTEE

John Arnold — Herford T Cowling
Frank Zucker — Edwin L Dyer
Charles Bell — Charles W Herbert
Charles J Davis — Mack Stengler
Paul H Allen — Ross Fisher
Georges Benoit — John Dored
Glenn MacWilliams — Philip M Chancellor
Ariel Varges — W H Jansen
Max B DuPont

PRODUCTION COMMITTEE

Daniel B Clark — Elmer G Dyer
John W Boyle — Ned Van Buren
William Stull

MEMBERSHIP COMMITTEE

Charles G Clarke — Alfred Gilks
George Folsey

ENTERTAINMENT COMMITTEE

John W Boyle — Frank B Good
Charles B Lang Jr — Vernon Walker
Alvin Wyckoff

WELFARE COMMITTEE

Hal Mohr — James Van Trees
Fred W Jackman

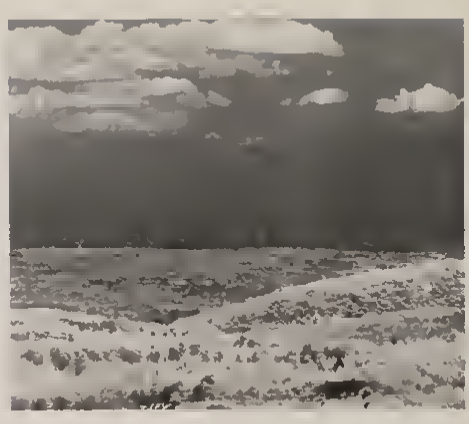


Photo of New York City taken with infra-red plate from a distance of 60 air miles and from an altitude of 2,107 feet, near Port Jarvis, Pa.

Future of

SPECTROSCOPIC photography or what is more commonly known as infra-red photography, has great possibilities both from aerial survey and military standpoints. However, its greatest value lies in its use in time of war. With proper equipment, it will be possible to photograph Army and Fleet movements from great distances and through this use, it will render the present smoke screen used for concealing fleet and army movements practically useless. It is also possible to determine the number of planes in any attack groups approaching strategic points long before those planes reach the point where they can discharge their bombs. This may be accomplished in conjunction with the sound detecting devices now developed and in use. The plane detectors will give the general direction in which to train the camera and after the exposure is made, the film may be developed in two minutes by a device now being worked out, then signals may be dispatched to the opposing forces with the necessary information.

For several months I have devoted much time in conducting experiments that always become necessary when a device or process of this type is brought to a point where the ordinary lay photographer may use it with accuracy. As soon as this process is perfected, military pilots will be able to use the spectroscopic camera with a very short period of training.

To support my theory of the value in the development of spectroscopic photography, I submit a photograph of New York City taken from a distance of sixty air miles and from an altitude of 2,107 feet, near Port Jervis, Pennsylvania. This photograph was taken with camera of my own design, also shown here. The lens used with this camera is a Schneider Aprochromatic, having a focal length of 75 cm. It is not only a process lens but one corrected for color and infra red rays as well. The speed of this lens at full aperture is F. 9. However the above photograph was made with an aperture opening of only F. 18 and exposed for a period of one second.

The plates and spectroscopic filters used were products of the Eastman laboratories, the spectroscopic plates being specially coated with infra-red emulsion are extremely sensitive to all light and have a speed in excess of the supersensitive panchromatic now on the market.

The filter used was an 89 and one of the densest filters used in this type of work. It permits only light waves in excess of 80 mili microns to enter the camera lens. These waves are some one hundred units beyond the vision of the human eye therefore, giving the lens a powerful haze cutting property. This combination was found to give excellent results for extreme long range photography work. The other infra-red filters and the ordinary lenses are practically useless for these great distances.

In examining the camera presented here, it will be noticed that the rear sighting vein is a very high grade and accurate compass. This is necessary for long range photography as the object to be photographed in this instance, was beyond the vision of the eye even with the aid of a powerful telescope. At once it is apparent that to get the object in a direct line with the camera, it is necessary to make compass corrections. I shall give you herewith a brief outline of methods used in plotting the camera's course in making photographs of this nature. First, lay off on a hydrographic office map with the aid of a parallel ruler a true course. When this is accomplished, correct your compass for variation error. The amount of this variation, as it is called, will be given on the compass rose of your chart and it must be applied accordingly. If the variation is East, the difference must be added to your observed bearing. If the variation is West, it must be subtracted from your observed bearing. This variation error, however, is not the only error to be considered in photographic work. If one is making his shots from an aeroplane, it will be necessary for him to consult the deviation chart in the plane. As a rule, the compasses installed in aeroplanes are calibrated for deviation (compass error due to magnetic influence of motor or parts constructed of iron.) If the variation has not been included in this correction, it will be necessary to apply it in accordance with the rule laid down above. If the photographer has been careful in the construction of his long range camera and has not included any material of a magnetic nature in its construction, it will not be necessary to consider the deviation error provided he is taking still shots of distant objects from mountain tops, but one must be sure that all metal objects have been removed from one's person, such as steel pocket knives, keyrings, etc.

A careful study of the following examples will aid you in making your compass corrections.

Example 1. A bearing taken by a compass free from deviation is 76°, variation, 5° W., required true bearing, the answer, 71°.

Example 2. A bearing taken by compass is 153° deviation on that heading, 3° W. variation in that locality 12° East, required true bearing, answer 162°.

The infinity point of such a lens as described in this article is approximately 700 feet. However, I recommend that in fixing the infinity point for long range work, the photographer use some object that is in excess of 2,000 feet distance. It is also recommended that when the photographer has determined the point of infinity he rack the plate 1/64th of an inch closer to the lens. This procedure becomes necessary due to the change of focal length of the lens just described when the spectroscopeic filter has been added to the lens. For long range work, I recommend

Capt F M Williams and his Invisibe Ray Camera with which he took shot on opposite page.

Spectroscopic Photography

By

Captain Flavel M. Williams*
In charge of Radio Communication with Byrd Arctic Expedition

that the filter be placed between the two lens units and never in front of the lens If it is not found practical to place the filter in position just described, it will be preferable to affix the filter to the rear of the lens inside the camera It is never necessary to use over-large plates or films, for the picture shown here was made on a 9x12 cm plate At sixty miles distance with a 75 cm lens, the width of the range covered in this photograph was in excess of fifteen miles

The Empire State Building shown here with its height of more than 1,200 feet, appears on the film as a very tiny object not more than ¼-inch in height, therefore, it is readily understandable, why for long range work, the use of an over-large plate is an uncalled for expense

Inasmuch as we are now making progress in exploring the stratosphere, it may be possible in the near future, to attain heights in excess of 100,000 feet without any undue difficulty When this is accomplished, spectroscopic photography will come into its own, as the greater the height from which the photograph is made, the greater the military possibilities this method has

The only limit in making long range photographs is controlled by the altitude of the observer, as he must attain sufficient height to overcome the curvature of the earth's surface I give herewith a table of heights compared to spectroscopic photographic ranges

Height in feet	Distance in Statute Miles
100	13 2
200	18 7
300	22 9
400	26 4
500	29 5
1,000	41 7
2,000	59 0
3,000	72 3
4,000	83 5
5,000	93 3
10,000	132 1
20,000	211 7
30,000	283.6
40,000	345 1
50,000	396 8

After having scanned these tables it at once becomes apparent that it is perfectly feasible when one has attained an altitude of 50,000 feet, to photograph New York City from Pittsburgh, Pennsylvania

Through these experiments we are constantly stepping up the speed of the spectroscopic plates, but there still remains much research work to be done along these lines Therefore, it is my opinion that every American who has the patriotic spirit and the welfare of his nation at heart, should avail himself of the opportunity to carry on experiment along the lines given here, as it is only through the experimentations of numerous photographers that it will be possible to solve this process of photography within a relatively short time

The cost of the equipment necessary to make long range photography is not great, and any person interested in photography of this nature, having moderate means, can carry on this work

The American nation being a peace-loving people, it is of great importance that we leave nothing undone to promote peace and our present Government's peaceful attitude toward foreign nations and their desire to bring peace and prosperity to our people, shows the very finest humane spirit and we of the American nation, hope for nothing better than to forever rid this world of wars and conflicts, but you and I know beyond a doubt, that this is practically an impossibility as war is the principal evolution process of keeping the population of the earth within certain limits It is well for all countries to improve medical science and skill to prolong the lives of their respective nationals, but when certain nations deliberately give bonuses and offer prizes for the largest families, they have but one objective, and that is, attaining military supremacy Nations that are practicing these methods at present will soon become overpopulated Over-population means expansion Expansion means the conquest of foreign lands, therefore, the United States and her possessions are the logical lands for these invasions Then at once it becomes apparent to the American people that in order to build up our defense and place ourselves in a position where we could adequately defend ourselves from such an invasion, we must not leave any stone unturned in the development of all implements and equipment that have a military value

I shall gladly forward any information desired, concerning the equipment I have used in this work

* Just returned from an eight months aerial survey of the Nicaraguan Honduran countries

Fred Gage, A S C.

Practical Side of Laboratory Work

by

Fred Gage, A.S.C.
Laboratory Superintendent,
Warner Bros. First National Studio

THE old saying that "all roads lead to Rome" is certainly applicable to the motion picture business. In almost every branch of the industry one will find amazing differences in the methods used by various workers in producing equally successful results: therefore, the discussion of almost any phase of the business should properly be prefaced by the frank admission that it represents but one man's individual opinion. Certainly, the present discussion of the practical operation of a motion-picture processing plant must be understood as representing solely the opinion of the author, an opinion gained from many years of successful practice, perhaps, but none the less one that is open to controversy, since many other laboratories operate on quite different plans, with acknowledged success.

Broadly speaking, the function of a studio laboratory is to develop the negative film—both picture and sound-track—to definite standards of density, contrast and quality, and to make therefrom "daily" and release-prints of maximum quality, as expeditiously and economically as is possible. Considered in the abstract—and especially in view of the extreme competence of all the cinematographers placed in charge of photographing production—it should be possible, even advisable, for a laboratory to function almost in the manner of a machine. Viewed in this light, the cameraman, knowing exactly the requirements and characteristics of the laboratory processing his film, should be able to govern himself and his work so as to absolutely co-ordinate his product with the laboratory's norm. If such a condition could obtain, it would be very nice for all concerned, for everything could be done with a minimum of effort. Unfortunately, however, practical experience shows that such a state of affairs—desirable though it might be—is, if not absolutely impossible, at least highly impractical.

Cinematography, as practiced in the studios, is an Art; hence it demands individualized treatment to a greater or less degree. Moreover, there is inevitably a considerable variation in the technique of individual cinematographers—which calls for a corresponding variation in the laboratory treatment of their work. In addition to this the exigencies of production cinematography frequently give rise to conditions beyond the control of the cinematographer, which call for further modification of the methods of the laboratory.

With this in mind, the laboratory methods used in the Warner Brothers-First National Studio Laboratory have been made extremely flexible, while none the less maintaining very definite normal standards. While some of our methods differ to a greater or less extent from those of other laboratories, they have proven themselves ideally suited to our requirements: they permit at once a high degree of standardization and an exceedingly desirable flexibility not always found elsewhere. In part they are the result of careful planning, in part the happy result of more or less uncontrollable circumstances.

In the first place, our plant is, I believe, the only large laboratory in America using the drum system for negative development. Strange as it may seem in these days of universal machine development we have found this system so completely preferable to any other method that we have definitely decided to continue it. Our adoption of the drum system was more or less fortuitous: like most of the other plants, a few years ago, we had always used the rack-and-tank system for negative developing, but the studio's switch to sound came with extreme suddenness, giving us but a week to prepare for sound-production and 1000-foot lengths of film. To procure and set up developing machines in so short a time was obviously impossible, and accordingly our present 1000-foot capacity drums were built, with shallow solution-tanks fed by a circulating system in which the strength and temperature of the solutions could be con-

(Continued on Page 195)

Sensitometric Control In the Processing of Motion Picture Film

By

*Emery Huse, A.S.C.

Editor's Note: This is the third in a series of articles by Emery Huse, A.S.C., on Sensitometric Control. The last installment will be published in the October issue and will deal with positive and sound negative control.

IT WAS previously discussed in some detail that there are in existence in Hollywood two different methods of developing negative, namely, the constant time method and the test system. Under this general heading of negative control such data will be discussed as applies to the constant time of development method. For that purpose the writer has obtained from one of the major Hollywood laboratories an exact copy of the sensitometric operations in the development of their production negative during an entire night.

It is the procedure in this laboratory to begin production negative development around 5:30 P.M. The procedure which will be described here is a nightly occurrence. Early in the afternoon the circulating system of the negative developing machines is turned on. After it has had time to thoroughly recirculate, which usually takes about an hour, sensitometric control strips, consisting of exposures on negative film of the same kind and type as used for their picture work and exposed in the Type II-b sensitometer under the negative set-up conditions, are developed. These strips are put through to determine the time of development necessary to produce the predetermined negative control gamma. If these first strips give values which depart from the desired condition, another series of strips are then developed under slightly altered conditions. Once the desired gamma is attained the time of development which was necessary to produce this gamma is considered the normal time of development for that night's run. At intervals of approximately one-half hour, together with the production work, further sensitometric control strips are developed. This procedure is followed during the course of the night. If at any stage during the development, gamma increases or decreases to any marked degree, the time of development is altered or replenisher is added to compensate for the change.

This laboratory in question submitted data as obtained during the production run on March 29, 1933. The first two tests which were put through after the circulating system had been in operation for a while were developed for the time which had been normal on the previous night. In this instance the time was 10' 37". These first two tests went through the developing machine at 3:00. It so happened that these tests gave, upon plotting, a gamma value of .62. If the gamma value obtained in such a test falls between the limits of .60 and .65 the time of development required to do this is selected as normal. Inasmuch as these first two tests at 3:00 gave a gamma of .62 and a further test at 5:26 likewise gave the same gamma, production negative was immediately fed into the machine and the night's run was begun. From 5:26 P.M. until 12:00 midnight sensitometric strips were put through the system at half hour intervals together with production and likewise with a sample of test negative made under conditions as described earlier in this paper. In Table 3 are given the exact data as obtained sensitometrically during the night, which includes the densities of each individual strip together with the gamma obtained and showing also the amount of footage which was developed between successive tests. These data when plotted gave curves of the type indicated in Figure 6. For the sake of brevity the two curves shown represent the strips which went through at 5:26 and 12:00 midnight. These were the first and last strips developed. It will be observed that there is a difference of .02 in gamma between these two tests, the 12:00 curve showing the lower value. From the standpoint of density if one individual step of the H and D strip is chosen, for example step 11, it will be observed that there is a maximum density change of .08. During that night approximately 30,000 feet of negative were put through the solution. These data are for one of the two negative developing machines which are normally in operation each night at this laboratory.

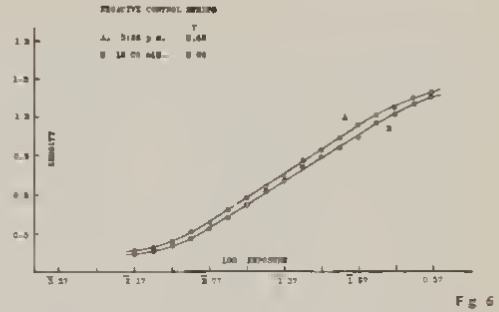


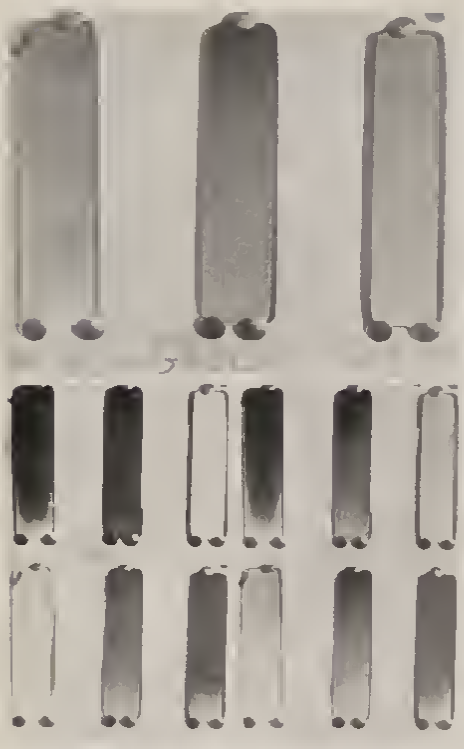
Fig 6

From the standpoint of replenisher, an average of eight gallons per hour of double strength developer, minus bromide, was fed into the system. If at any stage during the development gamma or density had dropped appreciably, one of two things would have happened, either the time of development would have been increased or the rate of replenishment increased. Inasmuch as the maximum density change amounted to only 10%, which is equivalent to approximately one 8ell and Howell printer point in speed, and furthermore inasmuch as gamma had changed less than 5% the same time of development and the same rate of replenishment was maintained throughout the night.

This sample of data from the laboratory in question represents an average condition. These data were not selected to represent either a good or bad night's work. The slight development differences which existed between negatives developed during this night required very little unnecessary manipulation in timing or printing. Naturally, all scenes of all cameramen did not print alike, but all negative was well within the normal printing range.

(Continued on Page 192)

*Paper delivered by Mr. Huse at April, 1933 S.M.P.E. Convention.



The same exposure was used in all of these illustrations regardless of filter . . . the subjects are color wedges with the color on each being heaviest at top and lightest at bottom. The top illustration is without filter . . . the filters used on other illustrations are indicated.

Special Effect Use of Filters Part III

by

Hartley Harrison

Editor's Note: This is the third in the series of articles on this subject by Hartley Harrison, well-known manufacturer of color and effect filters

WE previously discussed the relationship of colored filters to colored objects and their application in the creation of one of the common special effects—night scenes.

We have not, however, determined the density of the filter to be used under various conditions; whether a very dense filter should be used for a certain effect or whether a lighter filter would serve the same purpose.

The first consideration in deciding upon the density of the filter to be used is to take into consideration the relative contrast of the various objects in the scene.

We know that a "selective" color filter is only selective when there is color for it to select from. If the scene has nothing but blacks, grays and white there is no colored filter that will change their relative balance which cannot be done with a change of exposure.

Therefore, as we are dealing with color contrast the question is, how much color have we and in what direction do we wish to change the relative contrast, shall it be lighter or darker? We are, of course, assuming a normal exposure at all times and changing the contrast with filters only.

There are three different contrasts that can be achieved with filters, depending upon the scene to be photographed. If the scene consists of only one color and either black or white we can increase the contrast of that color as it is related to either black or white, or we can reduce the contrast of that color in its relation to black or white, if the scene has two colors and black or white, or three colors, we can then increase the contrast of one color, reduce the contrast of a second color relative to a third color or relative to black or white.

If the purpose of a particular effect is to increase the relative contrast of one color; say blue relative to white—for instance, blue sky to white clouds—then the density required of a color filter is a density sufficient to stop the amount of blue in the sky. If we use a fairly light yellow filter on such a scene we would get all the contrast possible as this filter is "minus blue" and we are using two colors, red and green, to hold back the blue.

Should we desire to reduce the contrast and we had the same photographic subject, the blue sky and white clouds, we would use a blue filter to give us the greatest reduction of contrast. This blue filter would permit the blue of the sky to come through, but would hold back the green and red in the white clouds. However, in an instance of this nature it required a much heavier blue filter to hold back the red and green than is called for when the action is just the reverse, that is, it would not require as heavy yellow filter (which is composed of red and green) to hold back the blue. Putting it into a few words, the rule is that two colors of a light density are as effective in holding back one color, as one color of a much heavier density is effective in holding back two colors.

Generally there are at least two colors to deal with in the average scene in addition to grays and whites and this makes the third step we can take in securing contrast a bit more involved.

You will secure a more comprehensive idea of what contrasts can be secured by referring to the illustrations of the color wedges which accompany this article. In the one which was photographed without a filter you will notice it has three shades of gray relative to the white background. Then if you will look at the one photographed through the light red filter you will note that the blue and green is darker than the red, but the red is grayer than the background. With this filter we have increased the relative contrast between the blue, green and red, as well as the contrast between the blue, green and the background.

In the illustration where the dark red filter was used, although the background is darker than the background taken with the light red filter, you will find that the contrast of the blue and green was increased relative to the background, but the red has now been reduced so far that it is the same shade as the background. This gives us an-

(Continued on Page 197)

The Purpose and Practice of Diffusion

by

Charles B. Lang, Jr., A.S.C.

DIFFUSION is undoubtedly one of the most valuable aids to good dramatic cinematography ever developed Unfortunately, however, the purpose of diffusion is by no means universally understood, and it is all too frequently practiced unsystematically To put it another way too many able cinematographers are prone to use diffusing media indiscriminately, without a clear comprehension of why, how, and how much to diffuse It is the hope of this writer that this slight discussion of the subject, necessarily brief though it must be, may at least aid in bringing about a more systematic understanding of this intensely valuable auxiliary

First of all, it must be borne in mind that the physical nature of the cinematograph film effectively precludes recourse to the still photographer's expedient of retouching None the less, recourse to some means of attaining a similar end is often desirable, and sometimes highly necessary Owing to the development of the art and technique of lighting a great deal of this pre-exposure "retouching" can often be done in this manner, a great deal I repeat but by no means all that should be done Here, however, we find that we can usually attain the desired end through the intelligent introduction of a slight degree of diffusion

Again, it must be remembered that dramatic cinematography is perpetually forced to strive for emotional as well as visual effects Here, too, diffusion can play an important role, for when coupled with effective and suitable lighting and composition, proper diffusion can aid in inducing the desired emotional response

However, it must also be remembered that cinematography, as used in the production of photoplays, is essentially a dramatic, narrative Art accordingly, it must be at once consistent and unobtrusive In reading a printed story, we are offended when the writer falls back on the obviously mechanical tricks of his craft—or the printer's—in order to gain emphasis If, for instance, he employs (as was so often the case only a few years ago) italic type to emphasize a word or phrase, your train of thought is at once diverted from the story to the printed page which bears it If an actor employs obvious mannerisms or vocal tricks for the same purpose, we are again irritated by his patent attempt to emphasize things mechanically; our attention is drawn from the story—from the characterization of the player—to the actor himself and to the mechanics of his performance As some great actor (I think it was George Arliss) once remarked, the secret of art is not being natural, but being unnatural—without getting caught at it The same thing is doubly true of dramatic cinematography its greatest secret lies in utilizing its manifold artistic and mechanical tricks to direct the emotional response of the beholder, without giving the slightest suggestion of their employment

Above—no diffusion Below—same subject and lighting diffused; note that the diffusion renders the make-up more natural-appearing, and concentrates the attention on the face, rather than on the costume, hands, or background, as is the case in the upper picture.

This must invariably be remembered when using diffusion strictly speaking, it is not natural—even though no human eye has yet been found capable of seeing things with the remarkable definition of a modern anastigmat—and so, if utilized isolatedly, even the mildest diffusion becomes painfully obvious, even irritating, to the viewer Yet when used judiciously, diffusion need not be apparent to the lay audience and in such instances it can have a powerful psychological effect

(Continued on Page 193)

New Method of Camera-Silencing

by

William Stull, A.S.C.

DESPITE the fact that we have been making sound pictures for nearly five years, the majority of studios are still using camera-silencing devices and methods which are admittedly makeshifts—waiting for the truly silent camera which (like prosperity) always seems just around the corner. Accordingly, production today is carried on with cameras housed in large, bulky "blimps," which weigh in the neighborhood of three hundred pounds apiece, and add mightily to the difficulty of production. In some instances more or less extensive alterations have been made to the internal mechanisms of the cameras, with the purpose of reducing the actual camera-noise, in other cases the cameras are merely blimped and forgotten. It is patent to the lay observer, however, that in most of the blimps used there is a great deal of surplus bulk and weight, which could conceivably be eliminated, making a much more practical unit.

At least one cinematic engineer—Mr. Armin Fried, for many years the head of the Engineering and Camera Maintainance Service of the Fox Studios—has attempted to accomplish this with such success that he has recently completed and submitted to the Testing Committee of the American Society of Cinematographers an excellently-designed semi-permanent, sound-proof camera-housing which measures only 12x12x12 inches and weighs 87 pounds with the camera and magazines fully loaded. The device may be used with either a Bell & Howell or a Mitchell camera.

While the tests of the device have not as yet been completed, and no report, therefore, can be released, the following description of the unit should prove interesting.

Mr. Fried's method of "Reconstruction-Silencing," as he terms it, consists of the following, according to a recent statement from Mr. Fried: "First, the camera itself is thoroughly silenced, in so far as is possible without removing or altering any of the salient features of the original design. While, I realize, certain firms have essayed to silence Bell & Howell and Mitchell cameras by replacing their regular movements, etc., with 're-designed' or 'silenced' movements of other design and manufacture, such a step has not been found necessary in my method. In fact, I have taken great pains to avoid doing anything of the kind, for both the Bell & Howell pilot-pin intermittent and the Mitchell speed movement are vital parts of these scientifically designed instruments and the qualities of these movements were undoubtedly vital factors in the original purchase of the equipment. Therefore, rather than remove, alter, or replace these vital parts with some miscegenate—and possibly faulty—makeshift, I have striven to silence the other noise-making parts (such as bearings, gears, etc.) which can be silenced legitimately, and to complete the job by applying a really sound-proof outer casing.

"After this internal silencing, a new optical system is added to the camera: a focusing system which makes it possible to focus the camera from the rear without either shifting the camera or revolving a lens-turret. Doing away with the lateral shifting otherwise employed permits me to apply a snug, form-fitting outer case, only slightly larger than the camera itself.

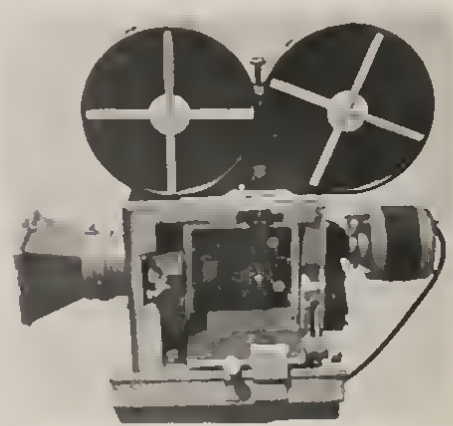
"This outer case contains the regular sound absorbing materials, air-spaces, etc., resulting in a small, compact camera case, in which the camera is a semi-permanent unit, removed only when in need of repairs. We have found it unnecessary to blimp the magazines, so they are attached directly to the case, which insulates them completely from metallic contact with the camera itself. Standard magazines are used, with a small metal cover over the take-up belting, and beaded moulding applied to both sides of the magazines, to break up any diaphragm or drumming effect. It has proven entirely successful.

"All of the camera-controls are on the outside of the outer case, the only time a door is opened is when the camera is loaded, which operation, of course, is done in the conventional manner. The focusing dials and controls for focusing and follow-focusing, are placed at the rear of the camera, while the shutter and counter dials and controls are at the right side. Lenses may be changed in less than a minute, by means of an automatic locking device the lens-mounts standard to the camera being reconstruction-silenced are used. A special sunshade is fitted to the case, and normally equipped with a 3-inch square optical glass flat, which can be replaced with any standard 3-inch glass filter if desired. Any desired features may be built into the sunshade, allowing for the use of gauze or hard mattes, glass mattes, etc., or the regular matte-box can be incorporated into the design.

"The optical system, which makes the small outer-case possible, is simple and effective. A turn of the focus-lever at the rear of the camera shifts the lens forward along its optical axis, and at the same time places a prism behind the lens, in proper focal alignment. The prism in turn reflects the image through the magnifying focusing system of the camera, which in itself is essentially unchanged. If a Mitchell camera is used the regular Mitchell focusing

(Continued on Page 197)

A Bell & Howell Camera "Reconstruction-Silenced" by the Fried Camera Company method.



WHEELS OF INDUSTRY

Dunning 16 mm. Color

● This month the Dunning Process Company of Hollywood announces pictures in natural color on 16 mm film that can be run on any 16 mm projector without any extra attachments as the pictures themselves are in color

The first subjects to be announced by Dunning are "Hawaii's Lake of Fire," which is described as carrying you down into the crater of Kilauea's volcano during a most active period Also the "River of Lost Souls," photographed in color by its own fiery illumination This subject is approximately 100 feet in length and is being marketed by leading dealers throughout the country

It is also understood that subjects of greater length will soon be marketed through the Kodascope library

The second of the Dunning series for direct sale by Dunning will be In the Blackfoot Country, ' picturing the Blackfeet Indians in colorful costumes and tribal dances

A regular schedule of releases will be instituted soon by the Dunning Process Company of these 16 mm Natural Color subjects

Victor Sound on Film

● According to announcements from the Victor Animatograph Corp their sound on film 16 mm projector is ready for the market This model will acommodate either 400-ft or 1600-ft magazines It has tone and volume controls super-Hi-Power illumination and contains the Victor feature of automatic protection against film breakage

A New Camera Sunshade

● The Bell & Howell Company announces an accessory which will undoubtedly be welcome by cinematographers

Lenses of short focal length are very extensively used and the sunshades and vignetting devices in general use interfere with the extreme angle of view of these lenses

The Sunshade announced by the Bell & Howell Company is so designed to permit its efficient use with lenses of as short focal length as 24 mm

To affix it to the camera the regular sunshade is removed and the new one put in its place

Provisions are made to make possible the use of a 2-inch and a 3-inch filter and diffusing gauzes in addition to a 2-inch round diffusion disc which is placed nearest to the lens

The new sunshade assures protection to the lens against stray light, with a minimum of inconvenience and loss of time

Trix Exposure Meter

● The C P Goerz American Optical Company announce a new exposure meter under the trade name of Trix Exposure Meter This meter is described as having a self-contained light source This source is luminous, according to the announcement, and is on a disc coated with a fluorescent substance that makes it highly automatic in its action

Willoughby Cataleg

● Willoughby has issued a very compact 27-page catalog on 16 mm equipment which is being sent free to those who request it It lists many projectors and cameras as well as such accessories as filters editors, title-makers, rewinds, etc

Filmo Sound

● For owners of FILMO 70 type cameras who wish to experiment with their own 16 mm sound recording equipment, Bell & Howell Company will install synchronous motors on such cameras If the camera is not already equipped with a hand crank, that must be installed A flexible cable to connect the hand crank shaft to the motor to eliminate vibration is also available

New Craig Rewind

● The Craig Movie Supply Company has announced a new rewind designed by Mr Craig This 16 mm rewind is patterned much after the professional rewind It is gear-driven throughout, which prevents slippage under load Also the handles are so built in that a slight pull on them pulls them out of gear so that the handle which is now being used does not twirl around during the rewinding of a reel Craig is making these new rewinds a part of his combination which includes his well-known splicer

Eastman View Camera

● The 'Eastman View Camera 33," for 5x7 pictures, has been announced by the Eastman Kodak Company

The new camera, rigidly constructed and easily manipulated but inexpensive, is expected to find its principal use in the hands of commercial and portrait photographers who have need for a second camera

This camera, currently going on the market, has a simple rising and falling front, and horizontal and vertical swing back, a single extension bed, back focusing operated by rack and pinion, and sufficient compactness to allow the use of wide-angle lenses It has a reversible ground-glass back fitted with a cut-off board that permits making two exposures on a 5x7 film or plate The bellows has an extension of 13 inches The lens board measures 4 inches by 4

The Eastman View Camera 33 will be sold equipped with either a film holder or a plate holder The weight of the camera is $4\frac{3}{4}$ pounds The finish is flat walnut and nickel

Filmo Topics

● The summer edition of Filmo Topics, published by Bell & Howell in the interest of 16 mm users, is off the press and is being distributed by dealers throughout the country

Editor Edwin A Reeve has compiled a specially interesting issue that takes in such timely topics as the "Movies Exhibited at the World's Fair " A pictorial page showing Clark Gable training his Filmo on Helen Hayes during the making of 'White Sister " Movie Camera Lenses are explained in a simple Way Hints on Vacation Filming, by Ralph Newcomb, is given a great deal of space Recording a Photoplay is authored by Harvey F Morris and of course, the ever interesting Question and Answers column conducted by R Fawn Mitchell

Photograph by H V [illegible]

AMATEUR SECTION

Contents . . .

● PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

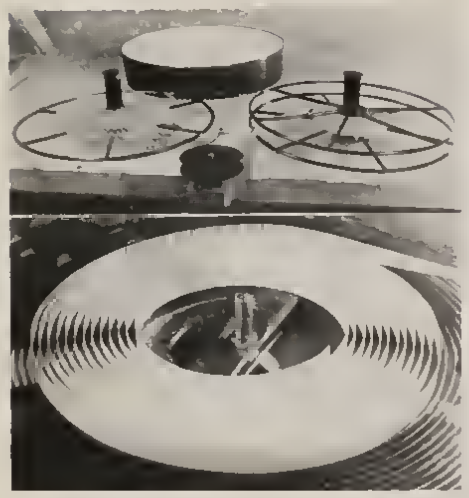
Next Month . . .

● DUE TO the [illegible]ually heavy schedule of productions that are now going on in all of Hollywood s studios we were not able to give you the article this month promised by one of the A S C members on the use of the Exposure Meter everything indicates it will be a part of our October issue

WE WILL have an interesting analysis of the Amateur in Europe by D Knegt of Holland This will be the first of a series of articles by Knegt, who is the honorable secretary of the Nederlandsche Smalfilm liga of Amsterdam

THERE WILL be an article on Interior Lighting by a member of the American Society of Cinematographers

and other articles of unusual and timely interest



At top is illustrated the Correx Developing Kit, which is more fully described in this article. At bottom is the spiral reel type of developing-rack.

Equipping the Home 16mm. Laboratory

by

William Stull, A.S.C.

EQUIPMENT needed for the home laboratory for the development and printing of 16 mm. film is not elaborate. All of it can be purchased and some of it made if the experimenter desires.

You'll need something to hold the film, which can be either rack, drum or reel. You'll need a tank to develop, a drum to dry the film and a printer to print it—and there you are.

Pin-racks are probably the oldest type of developing-rack, they consist simply of a cross-shaped or X-shaped frame, with uniformly-spaced vertical pins extending up from the arms of the cross so that the film is held with its edge at right angles to the surface of the solution, and completely immersed. Such racks can, of course, be made and in any size needed. A rack twenty inches square, made of two strips of wood or brass 20 inches long by ½-inch wide by ¼-inch thick, joined together in cross-shape with 34 rows of pins made of one-inch lengths of ⅛ inch dowel-stock spaced ⅛ inch apart, and with a clear space 3 inches in diameter in the center (to allow for a handle), will hold slightly over 100 feet of film. By making the rack X-shaped rather than cross-shaped, you can easily develop a 100-foot roll of film in any ordinary 18x24-inch tray. Such a rack is probably the cheapest equipment one can get, but like many other cheap articles, it suffers from serious disadvantages. In the first place, the action of the developer will not be even: you will get uneven streaks across the film wherever it is in contact with one of the pins, producing a light flash at regular intervals in the finished print, known as "rack flashes" to the professional. Also, you will find that the fairly abrupt bends at these same places give the negative a semi-permanent wrinkle or irregularity, which usually impairs the print.

Frame racks are, as the name implies, simply rectangular frames—sometimes fitted with guiding pegs—about which the film is wrapped, and which are, in turn, placed in deep, narrow tanks, for development. Up to a few years ago, such racks were used very extensively in developing professional film, but they have been almost universally displaced by machine development now.

At least one professional laboratory uses the drum system, and a smaller type of drum is commercially available, I believe, for amateur use; this method certainly is the most economical in the small amount of solution needed (all that is necessary is enough to wet the lower face of the revolving drum)—but the equipment needed is comparatively bulky, and extremely difficult to operate safely in total darkness, as must be done when using Panchromatic or SuperSensitive films.

The principle of the Stinemann rack is simple: merely a metal spiral into which the film is threaded (emulsion-side out, of course), and the ends of the film clipped in place with ordinary paper-clips. The film is kept on the rack through the developing, fixing and washing operations, and then removed to a drying drum.

The Correx System is essentially similar, except that the spiral guide is flexible, and is wound on the reel together with the film. If you have used the Correx equipment for developing "Leica" film—or even the old "Kodak roll-film developing tank," you will be able to visualize the working of this reel-and-apron system. The Correx equipment consists of a pair of wire reels, a corrugated-celluloid apron of the proper length, a wire flange, and a loading-frame. In use, the apron is wound around one reel, and placed on one spindle of the loading-frame, while an empty reel is placed on the other. The apron (which has about a yard at each end which is not corrugated) is started onto the empty reel, then the film which has been placed on a third spindle, is fed in with the apron before the corrugated portion starts to unwind thereby holding the film securely in place. At this point, or before, the wire flange is placed on top of the reel being filled, so that the film and apron will wind straight and evenly, and the two are wound together onto the reel. When this is finished, the outer end of the apron is clipped, the upper flange is removed, and the reel, with the apron and film wound upon it, is transferred to the developer, which is in one of the round tanks supplied with the outfit.

It is not wise to attempt to dry the film on the developing-rack (and, of course, impossible when using the Correx system). Therefore, a drying drum should be built. This is simply a wooden drum of appropriate size, with open, ribbed faces rather than a solid circumference, and mounted horizontally so that it can revolve freely. The film is wound around this drum (emulsion side out), and held in place at each end by rubber bands wrapped around one of the ribs and clipped onto the film; this allows for the considerable contraction which the film undergoes in drying which would otherwise either break the film or unfasten

(Continued on Page 190)

A Professional Discusses Continuity

by

Wm. J. McGrath

Author of "Ladies They Talk About" "Sob Sister" "Prison Doctor" and other professional productions

Wm. J. McGrath, author of many professional pictures

SOME people think of continuity as something you put into a picture at the splicing board. It must exist before you reach that stage or you can not put it into the picture.

Continuity is a simple thing. Sometimes it's just repetition from different angles or distances. The simplest illustration I can give you is the depiction of an emotion. Let's say a girl is showing fright. You get a long shot of the girl seeing something, let's say back of a bush or tree. You can intensify this fright by stepping up for a quarter shot, and then in for a closeup of the girl's face, then back again to the quarter shot and then to the continued action of the long shots, or possibly cutting in what she saw before you come into the long shot again.

The same sort of continuity is true where you have no drama. You want to show a car speeding down the road. You register the long shot, then the quarter shot and then for the closeup to the wheels or some other part of the car. If it is speeding you can cut this wheel action in frequently, or the tappetts of the car, the man's foot pressing down on the gas, or a shot at the speedometer. Those are the things that make the simplest continuity. It isn't necessary to have a story continuity for many of the things you are going to do.

Possibly the greatest trouble among amateur Cinefilmers is shooting such things as birthday parties. Children generally furnish their own continuity if you will just watch their play a bit. Take the thing in which they are interested and work up to it with quarter and closeup shots and then back again to the long shots showing them at play or using some toy. Possibly a real closeup of their faces to cut in at some action of the play or toy.

Look at it this way. You are going to show them playing a game, let's say it's the simple game of dropping the handkerchief. The children are in a circle, one child is running around the outside of this circle with a handkerchief. You show the action ... definitely establish what the game is. You get a closeup of the child running around. You get a more intimate closeup of the handkerchief in the child's hand. You flash back again to the child running around. Then you go into the closeup of the hand releasing the handkerchief and you see it falling to the ground back of a child. Possibly from there on you show a hand picking up the handkerchief. You see the little feet start out on the chase and you keep the camera at the empty spot in the line and you see the other pair of feet come into the vacant spot. You can elaborate on this by shooting several pair of the other feet twisting around showing excitement. You can get in the center of the ring, put the camera close to the ground and pan through the circle of feet on the feet that are chasing each other. Then back to the smiling and laughing faces of the children, taking each head as it turns and follows the runners.

It's just simple things like this that make continuity, but getting them down on the film in their intimate details does take a little thinking.

If you will look at the things you are going to picture from that standpoint you will find you can get a mighty interesting picture out of an old junk yard ... a second-hand car lot ... even out of a chicken roost.

When you cut into a closeup do not make that closeup too long, sometimes a foot is sufficient, depending upon the action. My experience with amateurs in acting is that they become extremely self-conscious of closeups and frequently just a flash registers what you want sufficiently to make the scene more interesting. However, if the closeup must tell something of the action, then it is permissible to make it as lengthy as the action dictates.

When we write professionally we always inject a certain spirit into the story, in fact every story mirrors a certain mood ... and you'll find every incident has its mood whether it is travel, play or documentary.

The amateur who travels into foreign fields has a wonderful opportunity for bringing back intensely interesting material. If, instead of shooting street scene after street scene, he would concentrate on one street in that city and secure the atmosphere of that street, of its people, of its buildings, he would have an interpretation of that whole city—an interpretation that would be interesting to everyone who saw it. A picture that would not require a great deal of explanation.

(Continued on Page 188)

Miniature

Portion of a 9x13-inch Leica enlargement Made at normal exposure on DuPont Super-sensitive Panchromatic Film. Developed in Paraphenylene-Diamme Formula No. 1.

IN RECENT months more and more emphasis has been placed on the use of the miniature camera in photographing production and publicity stills It has been rightly pointed out that a camera such as the Leica, using precisely the same film as is used in the motion picture cameras, and with its battery of lenses of varying focal lengths and speeds (enabling a lense to be selected which will be relatively the same as the one on the movie camera) is an unrivalled instrument for securing stills which will match in every particular the scene as photographed by the motion picture camera Since the emulsion in the two cameras is the same, details of make-up, set construction, scene painting, costume design and color correction can be recorded with every assurance that the still produced by the Leica will match precisely the photography of the production cameras

The use of the Leica in making test shots under doubtful lighting conditions and with various filtering effects is so well known that any mention here of the technique of making these tests would be superfluous To the industrial and free-lance cameramen outside of Hollywood, perhaps the greatest use of the Leica will be in making tests under unfamiliar conditions and in testing new filters and new emulsions as they appear The tiny instrument forms an economical means of familiarizing oneself with new developments and of improving one's technique at a time when emulsions and filters and the use of the two are undergoing constant mutations The amateur, too, will find this camera an invaluable aid and a decided shortcut in improving his photographic technique

To the person first embracing the Leica either for his own pleasure or in connection with his professional work, the claims advanced for it will seem extravagant It will seem incredible that a photographic instrument can pack so much precision into such a small space The relatively huge 16 by 20-inch enlargements made from 24 by 36 mm negatives will be put down as being exceptional But, time after time, so many disinterested parties have produced the results set forth by the manufacturers that the advertising claims can safely be relegated to the category of **proven facts.**

For most purposes, in and out of the studio, for record and publicity uses, it will be found necessary to produce sharp, 8 by 10-inch glossy prints which will reproduce with a complete fidelity to the original delineation To consistently produce Leica negatives which will enable the making of this size print on glossy paper to become a matter of routine it is only necessary, as in all fields of photographic endeavor, to exercise care Every process, from the moment of making the exposure to developing and enlarging the negative must be carried out with the dea of producng as sharply defined a negative with as fine a grain as possible Definition is dependent upon perfect focus, and perfect focus is taken care of by the automatic coupling between the lens and the built-in range finder.

When considering the matter of grain in a negative, three major factors must be taken into consideration, first, the inherent grain in the sensitive emulsion, second the development of the negative, and third, the exposure There are, of course, other minor factors concerning grain, which, while important to the technical worker, do not affect the grain of a negative to such an extent as the aforementioned three factors and thus need not be given the same serious consideration

When setting out with the intention of making huge enlargements a fine grain film should be selected The Perutz Persenso Film is one of the finest grain films available and should be used in cases like this It is, of course, orthochromatic and since the latitude of the emulsion is not so great as the Super-sensitive panchromatic films it is important to have fully exposed negatives Other fine grain orthochromatic films are the Gevaert, Agfa Fine-Grain Plenachrome and Mimosa Leica film Personal preference will determine which films to use, some workers preferring the highly Orthochromatic properties of the Perutz film while others prefer the properties inherent in a film of the Plenachrome tpe

Ordinarily panchromatic or super-sensitive panchromatic films are not recommended for fine grain results However, the DuPont Quarter-Speed Panchromatic film is extremely fine grained, having approximately one-quarter the speed of DuPont regular panchromatic film It is rated at approximately 16 degrees Scheiner to daylight and 17 degrees Scheiner to incandescent light It has considerable contrast and should be developed in a soft working developer unless the contrast is desired as in special work such as aerial photography, copying and the like

Regardless of the type of film used, the exposure should, in all cases be as nearly correct as possible and the latitude of the emulsions should not be depended upon to take care of over or under-exposure Over-exposure causes the grain

Negative and Grain

by

George W. Hesse
Cinematographer

to clump together and produces negatives which won't stand very great enlargement Many workers run up against this condition when using filters as they incorrectly interpret the filter factor with a consequence that they over-expose, cause grain and are either at a loss to account for the grain or they blame it on the use of the filter

The development of the tiny negatives is perhaps the most important step in the production of superior results A fine grain developer is essential if the enlargements are to be the best that the negatives can possibly produce Further, the film should be developed in either a Correx or a Reelo tank, as with this equipment the film is protected from all harm and since the tank is light-proof, developing can actually take place in the comfort of ordinary light

The developer to be used is again a matter of personal preference Some prefer to use the prepared developers which need merely to be dissolved in water, while others prefer to mix their own and vary the standard developers as they see fit Either way the results will be satisfactory, as there are prepared developers on the market which will give a very fine grain result Perhaps the best known of the prepared developers is the Perutz fine grain and compensating developer This is an excellent developer to use for routine work as it gives a well developed image in about 8 to 10 minutes at 65° F, while most of the prepared developers of the fine grain variety require from 20 to 30 minutes developing time A peculiarity about this developer, which many workers have observed is that as it becomes aged from use it seems to give an increasingly finer grain negative

The other prepared developers are of varied kinds, some in powder form as is the Perutz developer, while the others are in liquid form and act as stock solutions Hauff's Mikrol will be found to give a result, so far as grain is concerned, comparable to that produced by the Perutz fine-grain and compensating developer Other good developers are Rytol, Rodinal, Glycinol and Hauff's prepared Glycin In this group of six prepared developers one can find one which will suit his own individual requirements regarding the amount of contrast or softness desired in the negative

Perhaps the best known fine grain formula and one which has long been used for developing motion picture negatives, is the

Fine Grain Borax Developer (Eastman D-76)

	A	B
Elon	30 grains	40 grains
Sodium Sulphite	3½ ounces	3½ ounces
Hydroquinone	75 grains	40 grains
Borax	30 grains	30 grains
Water	32 ounces	32 ounces

Developing time, 9 to 12 minutes at 65° F.

"A" will give more snap or contrast, while "B" will give a softer negative

While it has been stated that the super-sensitive panchromatic emulsions are not recommended for extreme fine grain results, still, since this is the film mostly used by cameramen, it is necessary to run tests and experiments on it, and at the same time produce as large and detailful a series of prints as possible

The recently introduced developing agent, Paraphenylene-diamine, when properly used will produce so fine a grain on the super-sensitive pan films that glossy enlargements **in excess** of 8 by 10 can regularly be produced with so slight a grain that it will be negligible so far as reproduction purposes go

Formula No 1

Paraphenylene-diamine	90 grains
Sodium Sulphite E K	450 grains
Borax	255 grains
Tri-Basic Sodium Phosphate	210 grains
Water	16 ounces

Developing time, 35 minutes at 68° F

An even finer grain may be secured by deliberately giving the negative **double** the normal exposure and developing it in

Formula No 2

Paraphenylene-diamine	72 grains
Sodium Sulphite E K	420 grains
Water	16 ounces

Developing time, 30 minutes at 68° F

Paraphenylene-diamine is readily dissolved in hot water about 180° F and after it is in solution the Sodium Sulphite

(Continued on Page 190)

Portion of a 9x13-inch Leica enlargement Negative used DuPont Super-sensitive Panchromatic but this was given double the normal exposure and developed in Paraphenylene-Diamine Formula No. 2. The grain is even finer than obtained with Formula No 1.

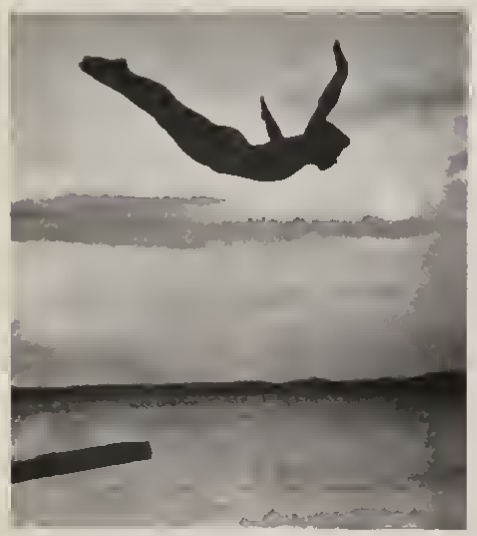


Photo by G. O. Russell

Slow Motion in Athletics

by

C. E. Brackett

Editor's Note — Mr. Brackett who is with the Hollywood branch of the Bell & Howell Co., has made a fine reputation for himself in the making of slow motion 16 mm. pictures of athletic events on the Pacific Coast. He was selected by Coach Howard Jones of the University of Southern California to make a 16 mm. record in slow motion of all of the 1932 U.S.C. football games.

I HAVE taken many slow motion pictures of track, field events, swimming, diving, tennis and football and have shown these pictures to the athletes who took part. In every instance those who viewed themselves on the slow motion screen have detected some fault or could see one or more things they may do to improve themselves. It has been a great pleasure to assist them and note their progress.

There is no sport that can profit more from slow motion pictures than football. The greatest value is that the players may see themselves through the eyes of the coach and have sufficient time to study each play as it actually happens. A coach, in order to be perfect, should have twenty-two sets of eyes seeing each play, but his attention can be placed on only one thing at a time. Slow motion pictures may be run over and over again until the coach has watched each individual player on the team execute his part in the play. The picture of the game shown to the team after the game augmented by remarks from the coach, illustrate his analysis in absolute truth. Can you imagine the value of slow movies of last year's game with the same school, viewed prior to this year's game? Verbal warnings are seven times less apprehensive than visual warnings. As a matter of fact, the greatest football coaches use slow motion pictures to add that nth degree.

Should you photograph any football games this fall, there are only a few important things to remember. Never take a scene slower than 32 frames per second. Start the camera at the end of the huddle and continue until just after the whistle blows. Get as high and as far away from the play as possible and use a four or six-inch lens on a tripod. If there is any error in exposure, have it lean to underexposure.

It might be well to explain the reason for thirty-two speed in connection with football. This speed places the desired results within the scope of the projector. On account of the lesser displacement at thirty-two speed, the projector run at eight speed will produce ultra slow motion (one-fourth the normal action) without a great deal of jumping. If the projector is increased to maximum speed, normal action will be seen, then, too, the action will be cut in half with the projector running at normal speed. This is very important as consumption of film has to be taken into consideration. It might interest you to know that it takes an average of 2,000 feet of film to photograph every play of an entire game at thirty-two speed, and also that two or three cameras are needed with an extra person doing nothing but changing rolls of film. The value in shooting at a distance, and from a high place, using a four or six-inch telephoto lens, lies in the fact that you can look down on the players and see the "holes" opened by the offensive team in their opponents' line, thus enabling you to "follow the ball." The four-inch lens, shooting from the fifty-yard line on top of the press box at the Los Angeles Coliseum, includes an area of about 12½ yards in the center and on the close side of the field, fifteen yards in the far center and the close ends of the field. A six-inch lens from the same spot takes in an area of about 12½ yards in the far corners. Your camera should be so arranged that you can make a rapid change from one lens to another. Football pictures even slightly over-exposed are not very satisfactory as the uniforms of most teams are such that they wash into the green or dry grass. The exposure should naturally be correct, but if any question arises between two openings, use the smaller opening of the two. An underexposed picture is preferable to one proportionately overexposed. And last, but certainly not least, keep the center of action on the left side of the viewfinder if the motion is directed towards the right, and the reverse if the action is progressing towards the left. The reason for this is that it is more interesting to see what might happen than to see the results of what did happen. Don't forget to photograph the score board no matter which team is winning!

Slow motion pictures make it possible to study the athlete's form as no other method can provide. When seeing the actual event taking place, motions occur so rapidly that many details are missed even to the trained eye. Seeing the same action on the screen two, four or eight times slower than normal, gives one facts not otherwise seen, especially so when the film may be stopped and a "still" projected at any point. There is also the great advantage in repeating the same action several times.

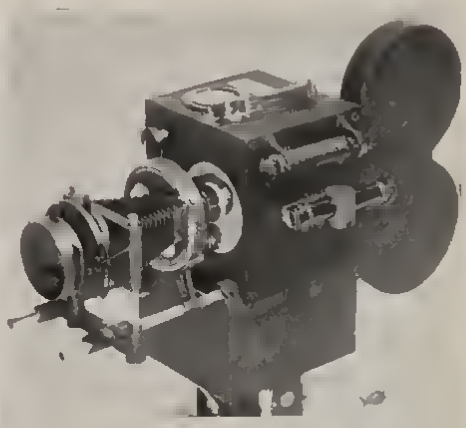
In ultra slow motion pictures (128 speed) taken of Johnny Riley, reputed to be the world's best diver, many details are shown that are nothing short of amazing. For example, when Johnny executes a forward two-and-one-half dive from the ten-foot board slow motion pictures make it very evident that two complete turns are made before he

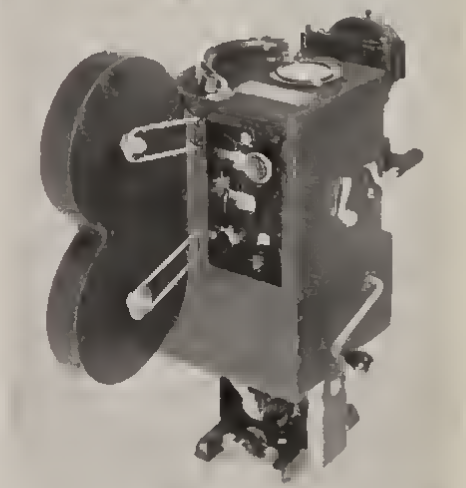
(Continued on Page 188)

My "Sierra Special Sixteen"

by

R. C. Denny
Cinephotographer





In the rear view there are two other cranks than the winding crank at the bottom. The larger is for ordinary two turn per second; the smaller for frame per turn. They are removable. The trigger release button is below the frame per turn crank and locks by a slight downward pressure. The upper button operates the exposure meter just beneath to the left is the frame counter, and to the right of that the focus on film eyepiece, which pulls out flush with the back of the camera. Beneath this is the gear shift lever, hardly discernible. Below that to the left is the footage meter, and just below that the push rod which operates the fader out. To the right of this button is the tachometer and in front of it the governor speed regulator. The upper button of the two on the left wall shifts the frame counter in and out of gear and locks it. The lower one is the brake release on the motor which locks by a downward pressure.

I SUPPOSE many people may wonder "why under the sun" with so many 16 mm. cameras on the market, should an amateur undertake to build one for himself. I am sure that it was not any vain desire on my part to outdo the manufacturer or to go my friends one better in owning the unusual. I simply felt that for all round amateur movie making, I needed a camera capable of the effects most often seen in present day pictures. At the time I started work on my camera, and in fact not until quite recently, was there a 16 mm. camera on the market that would do these things, not at any price.

The year and a half spent on my camera project might be divided about half and half between pattern making and machining. Built in spare time, and during a depression, the job naturally lagged at times. As I look back over it, I wonder how I had the patience to stick to such a task, although having all the facilities for doing the work. I certainly would not advise any amateur to build any equipment of this sort, unless he does have all the facilities, and gives the design ample study before starting on it.

As I was not building a noiseless camera for sound work, I was not particularly concerned in those features tending to reduce noises. This simplified the design, as I could use ordinary spur gears, projector parts and things I could get already made. I not only wanted to be able to run the film backwards in order to make lap dissolves, etc., but I wanted to take reverse action pictures with it in that manner. Consequently the entire mechanism is subject to reverse operation through the manipulation of a gear shift lever in the rear of the camera. This lever meshes either of two bevel gears on the main shaft with a bevel gear on the vertical shaft of a phonograph motor in the base of the camera.

This phonograph motor, a double spring affair, is largely responsible for the extra weight of the camera, and the height as well. Some of the gears in the motor were removed and others rearranged to get a greater torque. The governor flyballs were lightened to obtain a maximum speed equivalent to something over 24 frames per second. Adjustments of the governor regulator will give lower speeds as they may be required. An automobile speedometer was remodeled and geared to the motor shaft to indicate frames per second. Two revolution counters are geared to the camera shaft, the footage meter permanently and the frame counter for disengagement when not required. The camera will run 50 feet of film per winding, although seldom required to.

The change gears may be left in neutral, and the camera cranked by hand or other external means, such as a synchronous motor. There is also a one frame per turn crank provided for animations, etc. The focus on film device, instead of being on the side as in most 16 mm. cameras, reflects through the center partition into a tube and thence back through the magnifying lenses to the eyepiece in the rear of the camera. An electric exposure meter is built into the camera so that it will always be at hand when needed.

The camera proper accommodates 100-foot rolls inside it, while a 400-foot magazine may be fastened on the back of the camera when needed. Reverse takeup is automatically in effect when the camera is run backward, and vice versa. This is accomplished by the use of ratchet devices

(Continued on Page 191)

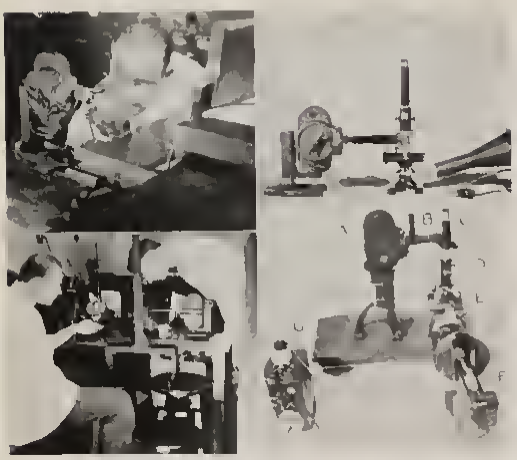


Photo No. 1, upper left—Reflex Focuser plus lens adapted sleeves give low-power magnification without use of microscope. Photo No. 2, lower left, and Photo No. 3, upper right show a Spencer adaptation of Bell & Howell camera complete. Photo No. 4 lower right is set-up used to get Brownian movement in blood serum.

Cinemicroscopy With 16 mm. Equipment

by

Wm. F. Kruse
Educational Director, Bell & Howell Co.

THE microscope unlocks a vast and often magic world to the cinematographer. Essential equipment requirements are only three—a camera, microscope, and a source of illumination. All workers in the field of cinemicroscopy must have these three elements in common, but here the identity ends. In no field is there more room and more necessity for personal adaptations, special methods, and controlled experimentation.

The attention of the writer was first called to some of the possibilities of this challenging movie world by an authoritative article in the S.M.P.E. Journal. The equipment used filled a fair sized room and must have cost a good many Rockefeller dollars—well spent dollars, moreover, for they made real contribution to scientific research and photography (*).

The other end of the scale is contributed by a physician friend who added to the three essential equipment elements only a 90° angle made of two shelf boards, and a black paper light-trap tube (**). Here is a cinemicroscopic outfit ready to hand in the average man's movie outfit. The projector is used as a light source. The camera is a regular Filmo 70-DA mounted on a focusing alignment gauge fastened at the proper height on the vertical support. Focus is obtained through the critical focuser built into the camera.

Desirable Refinements

The next addition to such an ultra-simple outfit is a reflex focuser that enables the photographer to slide in a reflecting prism whenever he wants to check focus, and thus minimizes the danger of disturbing the set-up as a result of shifting the entire camera. We should not overlook the advantages of this combination for macroscopy, giving low-power magnification by lengthening the bellows extension between lens and film plane, rather than through a microscope. The application of this device is shown in pictures 1 and 4.

Following this comes the refinement of the home-made camera support into an adjustable stand, or else one coordinated exactly to the tube extension of the microscope used.

A major shortcoming in this simplest of set-ups is that no provision is made to watch the subject while the picture is being shot. This is exceedingly important because some of the most interesting work involves fast moving microorganisms—and these are just the ones that persist in moving rapidly in and out of the picture, as well as in and out of focus. The remedy is found in a split-beam prism device that passes perhaps 10% of the available illumination for direct viewing purposes and diverts the rest at right angles into the camera. Two such devices, illustrated here (pictures 2, 3 and 4) the Spencer and the Zeiss, shoot the bulk of the light into a horizontal tube, and divert into the regular vertical viewing tube just sufficient light for ordinary examination. The Bausch & Lomb outfit operates similarly.

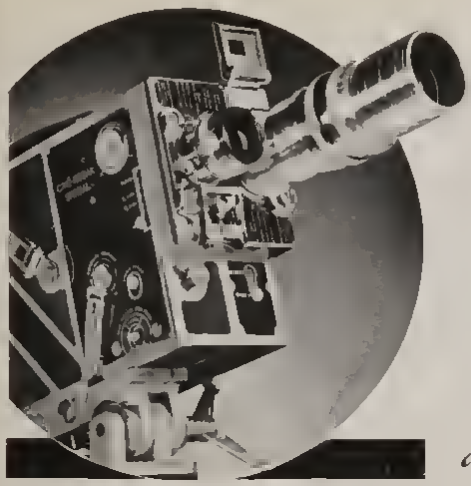
Some Typical Set-ups

The Spencer cine-micro-photo attachment for the Bell & Howell 16 mm. camera has been found exceedingly easy to use in graduate research work at Northwestern University Dental School and, of course, elsewhere. After the attachment has been fitted (the work of only a moment), the microscope is focused in the usual way. The field of the camera is clearly delimited by a green eyepiece mask having a clear rectangular center, the camera is brought to proper height by means of a finely adjustable heavy iron stand and we are ready to shoot. The 1-inch F 3.5 Cooke lens, set at infinity, is calculated as part of the optical system of this set-up.

The Zeiss-Goerz-Bell & Howell set-up pictured here (picture 4) was applied successfully in getting ultra-microscopy of Brownian movement in the blood serum which, counting projection magnification, gave an estimated enlargement of 250,000x (***). It consists of a Filmo camera (a) on an adjustable stand, a reflex focuser (b), split-beam device (c), microscope (d), cooling cell (e), arc lamp (f), resistance and switch (g).

A study of these various photographs will tell the reader more than many pages of descriptive writing. One additional set-up is submitted. It was devised by Dr. Arthur W. Proetz, of St. Louis, for the making of an outstanding motion picture of ciliary motion in the sinuses of the living mammal. His film attracted special attention at the 1933 Scientific Assembly of the American Medical Association, where movie "competition" was exceedingly keen. At that meeting 20 projectors were going at once, all 16 mm. but two. The Proetz set-up, shown in picture No. 5, provides a clamp (a) to hold the animal immovably in place, the platform and clamp shifting in all directions, replacing the stage, mirror, and sub-stage of the microscope. The conical glass tip (b) of the vertical illuminator (c) is lowered

(Continued on Page 189)



Professional Effects ...16 mm. *economy* CINÉ-KODAK SPECIAL

brings you many facilities previously available only to Hollywood cameramen

HOME movie clubs...ambitious amateurs, scientists, engineers...call Ciné-Kodak Special "the master of movie miracles." Precision-made, custom-built, this unusual 16 mm. camera overcomes the restrictions of ordinary movie making technique.

PROMINENT FEATURES—MANY EXCLUSIVE

Note the sensational features illustrated to the right—only a few of the many possessed by Ciné-Kodak Special. Others include the reflex finder which shows on a ground-glass screen the field of the taking lens—permits visual focusing with all lenses; variable speed control, from 8 to 64 frames per second when spring-motor driven; double lens turret, mounting any two of the six lenses available for the Special; interchangeable film chambers permitting instant switching from one type of film to another; long-running, spring-motor drive and one- and eight-frame shafts for hand cranking, the latter also being used for winding film back for dissolves or multiple exposures; two film meters, one geared directly to the camera mechanism recording the amount of film run or rewound, the other attached to the film chamber showing the amount of unexposed film.

STANDARD MODEL, $375

Ciné-Kodak Special, with Kodak Anastigmat *f*.1.9 lens, double lens turret, one 100-foot film chamber, set of six masks—price, $375. Alteration for specific needs will be estimated. For complete details, write for the abundantly illustrated Ciné-Kodak Special Book.

LAP DISSOLVES

The variable shutter permits the making of fades, dissolves (illustrated), the recording of fast action in sharper images, and provides extra control of exposure under intensely brilliant light conditions.

SINGLE-FRAME ANIMATION

Besides the single-frame crank shaft, the Special has a single-frame release button connected to its spring motor, with either of which "wipe" titles (illustrated), animation, and other effects may be obtained.

MASK SHOTS

The Special's masks are merely slipped into a slot in front of the film. Two vertical and two horizontal half masks, and a circle and oval mask are supplied with the Special—other designs may be ordered.

IF IT ISN'T AN EASTMAN, IT ISN'T A KODAK

EASTMAN KODAK COMPANY, *Rochester, New York*

HERE'S HOW

by A. S. C. Members

EFFECTS. Is the cameraman or the director responsible for the artistic effects in motion pictures?
Ivan Crawford, Portland, Ore.

● The Cinematographer, is fully responsible for the photographic effects in a motion picture production Selection of settings is made by the cinematographer in collaboration with the director, according to the requirements of the production Interior settings are designed and finished by art-directors and decorators and the cinematographer is responsible for the artistic composition and lightings of the numerous scenes photographed in the setting, which is always photographed under a great variety of angles

J A DUBRAY, A S C

TITLES. Is it possible to make first-class titles with sunlight and no artificial lights? If so, will you describe and diagram the apparatus and method?
J.A R , Grand Rapids, Mich.

● It is possible to take titles under either sunlight or diffused daylight Titles can also be made in the shade if the shadows are not too deep In fact, many prefer the shade as the light is even and there is no possibility of reflection back into the lens This, of course, requires a larger lens opening, especially when using positive film for direct titles Some interesting effects may be worked out on direct positive titles or negative titles when shot in the shade by the use of a flashlight playing on the title card in such a way as to imitate a beam of light crossing it, much as a searchlight No special apparatus is required, the only requirement being that the title card be evenly illuminated and the camera so set that the axis of the lens is perpendicular to the title card surface at its center

ALFRED GILKS, A S C

VALUES. What is meant by values in a picture?
R Nixon, Indianapolis.

● "Values" is a term originally used by painters, denoting the relation of the various elements of a picture, i e , in the composition, certain curved lines are arranged to give VALUE to straight lines, certain forms are so placed to lend value to others The term is more generally used as regards determining the juxtaposition of colors or the depth of tones, the relation between the light, shade and shadow of the various objects, and also the distance as related to the foreground In photography, for instance, selecting the background so that the lighted parts of the head will be relieved by darker areas in the background and the shadow side backed up by a lighter part of the background, is purely a matter of the knowledge of ' values '

FRANK GOOD, A S C

EXPOSURE How does the Professional Cinematographer regulate his exposure, with the lens stop or the shutter?
L. Johnsen, San Jose, Calif

● The majority of the cinematographers control their exposure by manipulating the shutter, for the reason the more the lens is closed the more 'wiry" unpleasantly sharp the picture becomes By using the lens open and calculating the correct exposure with the shutter, the same degree of softness is maintained throughout However, there are occasions where increased depth of focus is required, in which case the diaphragm of the lens is employed

J R LOCKWOOD, A S C

LENS NUMBERS. How has the numbering of the diaphragms of a lens been established?
J.J.U., Ft. Atkinson, Wis.

● The International Congress of Photography, held in Paris (France) in 1900 has decreed that diaphragm shall be characterized by a fraction of the form F-n, where n is the number obtained by dividing the absolute focal length of the lens by the equivalent diameter of the diaphragm

The diameters of the standard series of diaphragms shall be such that their progression corresponds for each of its terms to an exposure double of the preceding one

F-1, F-1 4, F-2, F-2 8, F-4, F-5 6, F-8, F-11 3, F-16, F-23, F-32, F-45

Each one of these stops has an area one-half the area of the preceding one

TITLING. In titling a picture is it best to use a past or present tense?
L. Gross, Chicago.

● As a general rule an audience if interested in the picture will 'live with it" The title is complementary to the action that the subject is performing right at the time that your audience is looking at it on the screen, therefore the present tense is generally the most adaptable to titling

L GUY WILKY, A S C

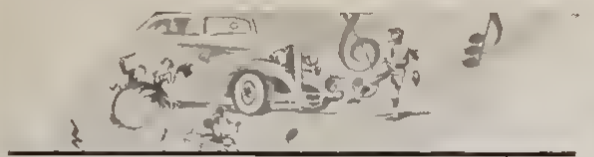
ANIMATED CARTOONS. I am planning to make some animated cartoons in 16mm. What camera would you recommend, what sort of lighting would be the best, and do you know if there is any place where I could get celluloid and paper already punched?
Carl R. Fallberg, Chicago, Ill.

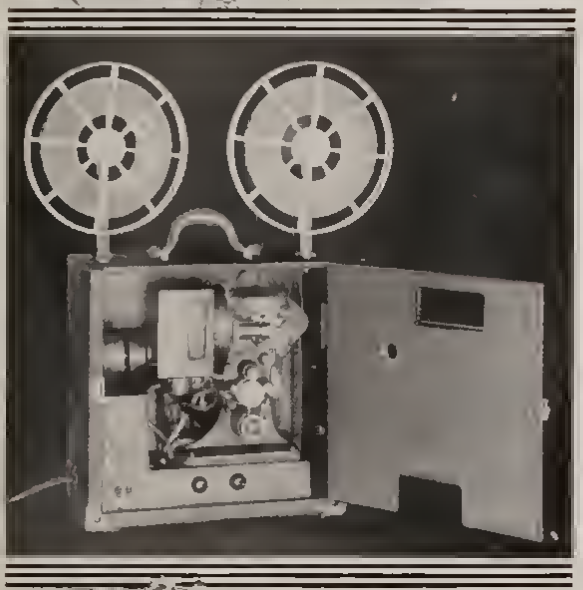
Almost any type of 16mm camera that can be made to work a frame at a time will do several of the better makes, such as the Victor and Filmo, as well as the old Model A Cine-Kodak, are fitted with hand-cranks, which can easily be geared down to single-frame action, but perhaps the best for this purpose is the Simplex, which already has an automatic single-frame movement Of course one with a focusing-mount lens is preferable, as most of these can be focused to two feet or less, which will be about the distance your drawings will be from the lens, but the fixed-focus mounts on the Victor, Filmo, and the cheaper Simplex models can be unscrewed, and so adjusted for such work, after a few tests

Ordinary Photoflood bulbs in proper reflectors will be excellent for this work, especially if you fit a tracing cloth diffuser You should use two lamps, and take care to locate them so that the drawing is illuminated with perfect evenness, also, see to it that the lamps do not reflect into the lens from the cover-glass

I do not know of any firm supplying ready punched celluloid and paper even if it were available, I believe it would be cheaper to perforate your own, using an ordinary double punch, such as you can get at any office-supply store

A FARCIOA EDOUART, A S C





Now 16mm Sound on Film is Practical!

Smashing established precedents . . . . disregarding the "can ts" of reputed experts . . . . VICTOR has created a 16mm S O-F Talking Motion Picture Projector that reproduces smooth, natural, full-toned sound that is amazing for its undistorted volume, its sparkling quality, its startling fidelity and its crystal clarity . . without delicate, confusing controls or gadgets that need to be constantly checked or turned or "babied"

Distinctively different in design and principle, and embodying many remarkable new features, The ANIMATOPHONE not only insures superior results, but SUPERIOR RESULTS combined with AMAZING SIMPLICITY, MAXIMUM EASE OF OPERATION and PRACTICAL COST

The ANIMATOPHONE is fully equipped with everything from Tone and Volume Controls to a highly efficient system of filtration It has Super Hi-Power Illumination and Victor's famous (and exclusive) AUTOMATIC PROTECTION AGAINST FILM DAMAGE Yet, with no essential feature lacking the ANIMATOPHONE is the crowning example of VICTOR'S well-known genius for effecting almost unbelievable simplifications

Anyone can learn, within five minutes, to give an ANIMATOPHONE presentation that will rival the finest professional showings — *in the small room, large auditorium, or out of doors* Thus, with the ANIMATOPHONE, sound-on-film becomes completely practical for homes, schools, churches, industries, etc

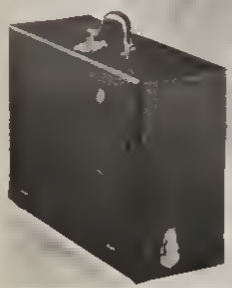
ANIMATOPHONE PRICES are the lowest ever quoted for fine Talking Picture Apparatus Write NOW for literature — and for a demonstration that will prove these claims.

MODEL 12B S O F ANIMATOPHONE
Enclosed During Operation 15 Watt Output Amplifier 400-1600 foot Film Capacity

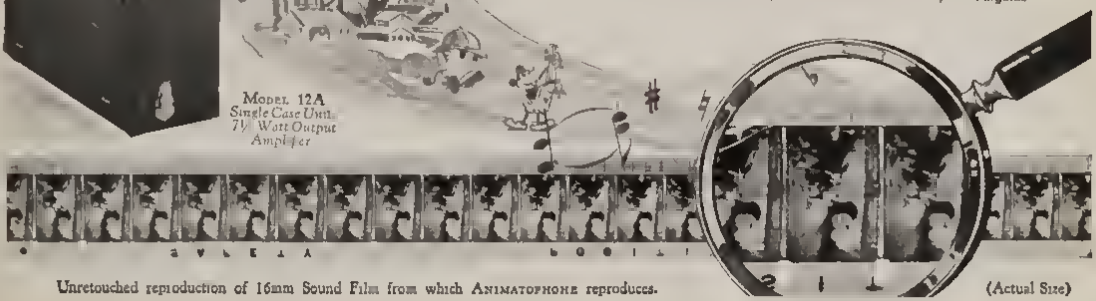
VICTOR
REG U S PAT OFF

ANIMAT⊛PHONE
16MM SOUND-ON-FILM REPRODUCER

VICTOR ANIMATOGRAPH CORPORATION
DAVENPORT, IOWA, U S A.
242 W 55th St, N Y C. 650 S Grand, Los Angeles



MODEL 12A
Single Case Unit 7½ Watt Output Amplifier



Unretouched reproduction of 16mm Sound Film from which ANIMATOPHONE reproduces. (Actual Size)

Voss Shoots Chicago Fair

● H W Voss, Cinephotographer, has made his annual migration to Wyoming from Florida, where he spends the winter On his return trip he stopped off in Chicago to try out his new Cine Special 16 mm Camera on the Chicago Fair The accompanying photo shows Voss set for action in front of the Hollywood building

Voss is especially enthusiastic about color pictures and a part of his new Cine camera is the kodacolor attachment

500 See Prize Pictures

● When W Stuart Bussey in association with the Club he conducts in Indianapolis presented the AMERICAN CINEMATOGRAPHER 1932 Prize Winning Amateur Motion Pictures in the public library auditorium an audience estimated at 500 viewed these outstanding 16 mm productions

Bussey presented the pictures for three nights and reports that each succeeding night the audience was bigger, with the last night's attendance reaching 300

Among the clubs presenting these prize winning pictures in August were Pendleton (Oregon) Club on August 10th, Movie Makers of Grand Rapids (Mich) on August 19th, Amateur Cinema Club of the Oranges Orange, N J August 20th, Club at Ossining, N Y, on August 26th Greater Oakland Motion Picture Club on August 28th, and Cinema Club of San Francisco on August 29th

Among those exhibiting the prize pictures in September will be the Cinema Club of Philadelphia, September 11th, Amateur Movie Club, Austin Minn, September 15th, Hudson County Cine Club, Jersey City, N J, September 20th, and the Amateur Cinema League, Newark, N J, September 26th

Los Angeles Cine Club Holds Amateur Contest

● With an attendance averaging over 100 at each of their monthly meetings, the Los Angeles Amateur Cine Club has found an added interest in a contest extending through November Each of three best pictures at each showing will be eligible to compete for final awards These include a beaded standard sized screen offered by the Amateur Cinema League a Victor camera by J W Robinson Co, and prizes by Eastman Kodak Co, and Bell & Howell

Notably are pictures entered by Mr Richard Oden, "Up the Coast to Washington" taken in 8 mm with lap dissolves, fade-outs, and tinted in part Messrs Wayne Fisher and Fred Champion combined their National Air Race film to include all of the daring stunts and flights, with night shots and close-ups taken on the field of Amelia Earhart, Roscoe Turner, Mary Pickford, Tom Mix, etc Mr C Earl Memory's picture, "One Day In Her Life," a human interest film of children, is also a contestant

President C E Memory's plan of using every other meeting for members' films, with a committee to offer constructive criticism and alternating with discussions by professional experts who demonstrate by feature films, has done much to increase the club's membership

Leica Photo by Gilbert Morgan

Cinefilmer Turrets Stewart-Warner

● Through the courtesy of T R Craig, of the Craig Movie Supply Company, Pacific Coast representative of the Stewart-Warner line of photographic equipment, we are able to present the photo above of the semi-professionalized Stewart-Warner Camera as reconstructed by Emil Vollenweider of Sacramento, an electrical engineer by profession and a Cinefilmer by choice

Vollenweider has equipped it with a three-turret lens mount, as can be noticed by the above photograph He also has installed a focusing tube which is always in line with one of the lenses on the left side of the camera On the right side he has constructed a viewfinder with the rear element built for parralex at all distances from close-ups to infinity

British Cine Organization Issues Monthly Bulletin

● Bearing the title of "I A C Bulletin," the Institute of Amateur Cinematographers, Ltd, of England, issue a monthly bulletin to those members who are desirous of receiving it, which both in format and contents is an ideal piece of literature for this purpose

In addition to interpretations of the spirit of the organization, its rules and by-laws, it also contains many fine and helpful articles for the members

The clean-cut manner in which this Institute has been organized with its common sense rules and regulations and including as it does, not only Cinefilmers but also business organizations, makes it representative of the entire industry in Great Britain

As a concrete evidence of the constructive spirit which lies back of this organization we quote its code of ethics "We members of the Institute of Amateur Cinematographers of the British Empire pledge ourselves to a faithful discharge of our duties, and that we will hold to the utmost of our power the amateur status in act as well as in deed We further undertake as members that we will not cause or suffer, either by act, word or deed, anything that might be thought, outside this Institute, derogatory to amateur cinematography in general, but maintain and uphold the status of the amateur as we members and our Memorandum of Articles of Association conceive them"

Bussey Filming Satire

● W Stuart Bussey who recently formed an Amateur Club in Indianapolis, is busy filming a satire which has been titled "Four Knights in a Bar-room" When finished it is the intention of Bussey and his associates to enter this production in the AMERICAN CINEMATOGRAPHER 1933 competition

AMATEUR CONTEST CLOSES SOON...

The AMERICAN CINEMATOGRAPHER 1933 Amateur Competition is open to amateurs all over the world who use either 8, 9½, or 16 mm film.

The films must be in the offices of the AMERICAN CINEMATOGRAPHER not later than October 31, 1933.

There are no restrictions as to the number of subjects that may be entered nor are there any restrictions as to the length of the subjects. The one strict rule that applies, however, is that no professional help is received in the making of the picture. This does not include titles which may be made at a laboratory.

The recognition of those who are given awards will be in the nature of a gold medallion which will be given by the American Society of Cinematographers who will be the judges of these pictures.

The pictures will be given classifications so that the competition may be fair to all entrants. By this we mean that an entrant having a documentary film will not compete with one who has based his on a scenario. Of course, there will be more classifications than these. The classifications will be created according to the pictures that are received.

Please remember your films must be in the office of the AMERICAN CINEMATOGRAPHER, 6331 Hollywood Boulevard, Hollywood, Calif., not later than October 31, 1933

Slow Motion In Athletics

Continued from Page 180)

gets down to the level of the board I know of no one who has ever noticed this fact in viewing the actual dive It is possible to detect the work of particular muscles at any point

Not only are slow motion pictures instructive, but unusually pleasing to view due to their added gracefulness It seems that one never tires of seeing 128 frame per second pictures of Johnny Riley doing all of his dives The difference between success and failure is as little as the thickness of one piece of tissue paper In this day, in order to reach record marks it is necessary to take advantage of every detail, each adding the nth degree necessary towards perfection and the nth degree may be detected easily in slow motion pictures In the case of field and track events, slow motion pictures show the difference between just good work and record breaking work Take the seemingly simple task of putting the shot John Lyman of Stanford University not only times his whole form perfectly, but he adds the power of the finger thrust, and that added accomplishment puts him in the limelight Slow motion pictures viewed by the average shot putter show him just where he can improve in order to approach world records or at least to greatly improve

Let us diverge for a moment nto the mechanics of the projector and the camera so that we might see more clearly why slow motion occurs, what the relative speed ratios are and the action on the film itself and then on the screen

A 16 mm projector running at the rate of 16 pictures per second shows 160 frames in ten seconds As there are forty pictures to the foot ten seconds at the above speed shows four feet of film Film photographed at the same rate of speed presents normal action on the screen in that it takes the same period of time to project the action as it did to record it

If an athlete runs the 100 yards in ten seconds flat, he is moving at the rate of thirty feet per second Photographed at the normal speed of sixteen pictures per second one picture is taken every 22½ inches of the runner's progress Motion pictures taken in this manner show considerable blur as one picture shows one of the runner's legs stretched forward and in the next picture the same leg is almost vertical and the foot is on the ground The difference between the two pictures is called the displacement The closer the camera to the runner, the greater the film displacement (Note the difference between object and film displacement) It is plain to be seen that such motion pictures would not be satisfactory for form analysis

Should the speed of the camera be doubled to thirty-two frames per second, and the same runner photographed, the object displacement would be decreased by one-half or an eleven and one-fourth inch difference between pictures The 100-yard run made in ten seconds would then require eight instead of four feet of film to record it Therefore it takes twice as long for projection at normal speed, consequently cutting the screen action to one half The same scene photographed at sixty-four speed has an object displacement of 5 62 inches, using sixteen feet of film and reproducing the action four times slower than normal

It is also possible to photograph 16 mm motion pictures at the rate of 128 frames per second In this case, the mentioned runner is recorded at a 2 81 inch displacement and slows down the screen action to one-eighth It takes one minute and twenty seconds to reproduce what actually happened in ten seconds

A Professional Discusses Continuity

(Continued from Page 177)

You were urged, in a recent article in this magazine, to see the Fox Movietone Magic Carpets to get an idea of just how the professional goes about giving you the spirit of a city The best advice I can give is to reiterate that statement see those professional pictures if you are going to travel You will find they are made in what is termed silent pictures ' They have titles and sound is dubbed into them Even if some of the explanatory talk was eliminated they would still be understandable

While the amateur has not a great deal of time for preparation, still just a few minutes' thought before shooting will often give you the sort of continuity that will bring your pictures up to professional standards

Even if you master all of the technical details of photography you will find your most satisfactory efforts will be those in which you have given thought to continuity

Ernie Page Marries

● Ernie Page who, together with William A Palmer, made the picture, 'Tarzan Junior," which was awarded the first prize in the AMERICAN CINEMATOGRAPHER 1932 Amateur Competition is announced by Palmer as now being among the married

On July 16th Page married Miss Murdock and spent his honeymoon on the Monterey Peninsula and at Yosemite Valley

Page, having graduated this year from Stanford, is now stationed at the Highland Hospital, Oakland, as an interne

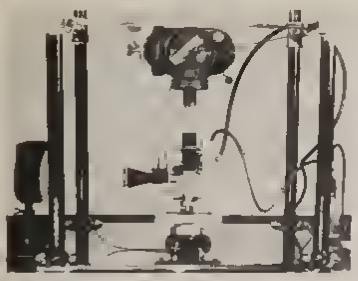


Illustration No. 5—The Poetz Set-up

Cinemicroscopy With 16 mm Equipment

(Continued from Page 182)

into the wound where the cilia can be seen Two glass tubes (d) supply fluids and remove them by suction They are held in place by a support (e) fastened to the microscope by a universal joint The reflex focuser is seen in place at (f) fitted to the camera (g), which is suspended on a firm adjustable overhead support Im-1) A small incandescent bulb (i) supplies illumination during the set-up, and is replaced by the arc (j), projected through a water cell (k), when photography begins The cable release (h) shifts a small mirror in (c) when one form of illumination is to replace the other

The five set-ups outlined above have all been used in successful cinemicroscopy Three have been previously described in the literature referred to in this paper, and for a more detailed consideration the reader is referred to the original articles Mr Mitchell's paper is particularly interesting in view of its detailed technical consideration of results obtained from different types of carbons with different film emulsions

A description of the 'tools," as given here, is by no means a course in how to use them Such a course is beyond the scope of present space While cinemicroscopy is certainly not the easiest form of movie making it is, indeed, one of the most interesting It calls into use everything a man has learned about motion picture making, about still photomicrography, and about clinical technique It involves highly special problems of illumination, exposure, filters, elimination of vibration and reflections, etc However, amateurs and professionals both are getting exceedingly useful results, and are having a lot of fun besides

(~) Heinz Rosenberger Rockefeller Institute for Medical Research Micro Cinema in Medical Research Trans SMPE XI 32 pp 750-758

(~) Richard B Stout M D "Clinical Cinemicroscopy' Jnl of the Biological Photographic Association 1 1 pp 18-21

(~~) R Fawn Mitchell The Cinematography of the Brownian Movement with the Filmo Camera Trans SMPE, XV, 5 pp 679-688

Equipping the Home Laboratory

(Continued from Page 176)

any rigid connection. When putting the film on the drum, always run it between two surfaces of moist chamois, to remove excess water, and to prevent the formation of water-marks, as well as to remove any dirt or foreign matter on the film. For the best results, the drying-drum should be revolved at about 100 revolutions per minute while drying, to expedite the drying, and to assure that the film dries evenly. This can easily be done by belting a small electric motor to the drum, using the drum itself as the large pulley. Under normal conditions, 100 feet of film will dry on a drum in about ten or fifteen minutes.

There are, fortunately or unfortunately, as one may look at the situation, only a few types of printers for 16 mm film available in this country at present. the outstanding ones are the "Arri" step (or intermittent) printer, recently described in this magazine and bearing the official Seal of Approval of the Testing Committee of the American Society of Cinematographers, the Stinemann and Uhler. It is also possible—though not always advisable—to convert some types of cameras and projectors (such as the Model A Eastman Cine-Kodaks and Kodascopes) into improvised printers. I have, indeed, seen some very presentable printing done on a Model A Eastman projector, but, naturally, the best results will be had using a regular printer.

The technique of printing motion picture positives resembles that of printing still pictures in that the negative and the unexposed positive are run through the machine together, and the later is exposed through the negative, and then developed. Just as in still printing, you can vary the time of exposure, so, too, in cine-printing, you can vary the speed of the machine, but you can also vary the intensity of the printing-light, and this is done more often than the speed is changed. In practice, it is wise to make tests of every scene, making a note of the proper light-setting, and then patch an inch or two of raw positive into the negative, to show when to change the light. Positive-film, of course, is developed, fixed, washed and dried the same as negative, except that you can work by a moderately bright red light. Incidentally, since most printers, for reasons best known to their makers, are not fitted with a take-up mechanism, you will find a cloth-lined hamper, into which the two films from the printer can drop, a most useful accessory. It is also valuable in unloading the drying-drum, by the way.

In all stages of motion picture laboratory-work—and doubly so when 16 mm film is being used—cleanliness is of vital importance. be sure that your reels, aprons, racks, tanks, etc., are perfectly clean, that your water-supply is pure and clean, that the air is as dust-free as possible, and that the film never falls on the floor (which should be clean, anyway). Then, you can expect quality results—and an amazing instruction in practical cinematography.

Miniature Negative and Grain

(Continued from Page 179)

should be added and when this is completely dissolved the Borax and Tri-Basic Sodium Phosphate may be added to complete the developer. This developer should only be made up at the time of use as it does not keep well in solution.

The developing tank should be agitated at frequent intervals to prevent the formation of streaks of varying densities due to a stagnant condition of the developer. Agitation, while it does not seem to have an appreciable effect on the grain size, will produce a more rapid development and a greater contrast than will a stagnant development.

The way the film is dried has some effect on the ultimate fine grain result. When it is hung up to dry, both sides should be wiped free of excess water by means of a piece of clean chamois. This not only cleans the film of tiny particles of dirt which may have been in the wash water, but also prevents water streaks and promotes rapid drying, which keeps the grain size down. Since the top of the suspended film dries first, it is wise in the interest of securing a harmonious grain result on all the negatives, to reverse it at times end for end so that the entire strip of film will dry almost simultaneously.

There but remains the problem of enlarging, which does not rightly come within the scope of this paper. It is sufficient to say that an enlarger should be selected which employs a condenser system emitting parallel rays of light which keeps the grain and mechanical defects of a negative down to an absolute minimum.

Note. PARAPHENYLENE-DIAMINE. This developer is sold either as the free base or as salts (usually the hydrochloride). The free base and the water soluable salts may cause eczema wherever their dust touches the skin. This does not occur with the aqueous solutions of these salts, and it can be avoided, even with

the dry product, by using it in the form of sulphate or other salt insoluble in pure water and soluble only in sulphite or alkali solutions—Extract from Clerc's "Photography, Theory and Practice," p 232 Edit 1930

Note Paraphenylene-diamine and Tri-Basic Sodium Phosphate cannot ordinarily be secured from the average dealer in photographic supplies However, it can be secured from the R J Fitzsimmons Corp , 75 Fifth Avenue, New York, N Y , who are importers of the chemicals

My "Sierra Special Sixteen"

(Continued from Page 181)

and is applicable to the 400-foot magazine as well A variable field viewfinder is mounted in a turret alongside the lens on a hinged bracket so that it may be turned up against the camera when not in use This turret is calibrated to compensate for parallax and match any lens that is being used Above the finder is mounted a distance meter which is simply a critical focusing device calibrated in feet

The three lens turret fits into the front of the camera flush, and locks in the three positions A rotary shutter is used having a 220-degree opening The shutter shaft carries a cam which the releas etrigger engages to stop, always at the same place The shutter is arranged to stop just as the aperture is covered Thus in starting, the shutter gets practically up to speed before the first exposure is made Fades are made by an automatic dissolve device just in front of the lens This device supports the small end of the bellows of the effect device, the whole thing resting on steel tubes projecting from the front of the camera The effect device houses the filter holder mask box, and iris for circle effects, all of which are indispensable at times

The entire assembly is extremely rigid and the camera is not unduly noisy considering all the moving parts there are in it The main body of the camera is a cast aluminum box or shell of ⅛-inch thickness having one vertical partition and one horizontal, both cast integral Bronze bushings are used throughout, and are oiled from the top of the camera through small tubes One set of ball bearings is used on the main camera shaft to take care of the thrust from the bevel gears The writer is quite well satisfied with the job as it is the first purely mechanical thing of any consequence that he ever undertook to build The camera is essentially a studio type and will probably be employed more for amateur photoplays than any other purpose In this connection it might be mentioned that the camera gets its name from the 'Sierra Cinema League' the local movie club with which the writer is associated, and to which his efforts are dedicated

Greenbrier Starts Picture

● Now that script troubles have been solved at the Greenbrier Amateur Motion Picture Club that organization is busy putting their new story, 'The Prodigal Wife,' in the ' box "

This picture it is announced, will be the entry of that club in the 1933 competition of the AMERICAN CINEMATOGRAPHER

Among those included in the cast are Genevieve Wyatt, Robert W Waller, Laddie Frechem, John Frechem and Hal Morey, the intrepid cameraman and secretary of the club The picture is being directed by R H Patterson, club president, and Guno Karlberg is also numbered among the cinephotographers on the production

To Make Religious Picture

● Vincente Mills of Manila, Philippines, for his entry in the AMERICAN CINEMATOGRAPHER 1933 competition will make a religious picture built around the practice in his country which takes place during Holy Thursday and Good Friday each year As this practice is fast disappearing, according to Mills, it will also act as a fine historic record

Sensitometric Control in the Processing of Motion Picture Film

(Continued from Page 169)

Again it must be borne in mind that by this system of development the solution was maintained constant within very narrow limits to produce the same degree of development. The contrasts that were exhibited by the various negatives were the result of the various brightness contrasts in the scenes photographed. Inasmuch as it is the practice of this laboratory to develop the bulk of its work for a fixed time of development the cameramen realize that any change they make in their exposure conditions will be evidenced in their negatives.

By the test system of development it is first necessary to construct a short time-gamma curve, similar to the one shown in Figure 5. From that curve it is possible to determine the time required to give the normal gamma. In this system the time is varied, dependent upon the judgment of the man in charge of the negative development, and because each laboratory accurately records all sensitometric data it is quite possible to determine just what control gamma is obtained at any time of development other than normal. This is done of course, by referring to the time gamma curve previously established. The system of control of the solution over a period of time, when the test system is used, is done in a manner identical to that which is described above for the constant time of development method.

The developers in general use for the development of picture negatives are modifications of the standard E.K. D-76 borax formula. They are modified to fit the needs of the various types of developing machines. Quite naturally, all laboratories do not use the same formula, even though there is a similarity in the machines used. Differences of opinion as to photographic quality and differences in the recirculation and agitation of solutions are factors which enter into the question of developer formula differences. In the final analysis there is not a great deal of difference between the various negative formulas in use in the various laboratories in Hollywood. It is desirable, however, to include in this paper a typical machine negative developer formula. Developers of this general composition are in use today and produce excellent results. The formula quoted in Table 4 shows the chemical composition of such a developer.

Table 4

Picture Negative Formula

Elon	1 lb. 15 ozs.
Sodium sulphite	96 lb.
Hydroquinone	4 lb. 13 ozs.
Borax	1 lb. 12 ozs.
Water to	120 gals.

Purpose and Practice of Diffusion

(Continued from Page 171)

Practically speaking, the use and method of diffusion must in a great measure depend upon several factors the story the requirements of the individual scenes, the lighting and photographic technique of the cinematographer, the needs of players, sets, costumes, etc and various other minor considerations, including in some cases, the characteristics of the laboratory processing the film (I have actually known of instances in which a cinematographer, going from one studio to another, has found it impractical to use his previous diffusion technique solely on account of the characteristics of the different laboratories involved.)

None the less, I believe that certain general principles can be suggested In the first place, diffusion as a whole should be governed to a great extent by the nature of the story in production, clearly, an ultra-realistic or melodramatic story, such as "Scarface," on the one hand, or "Jekyll and Hyde," on the other, demands a definite harshness and contrast in the photography, clearly, diffusion will be of little use here The same is true of broad comedy, where high-key lighting must flood every corner of the set, so that no slightest bit of action is lost The more polished, dramatic comedy and comedy-drama, on the other hand are usually enhanced by a consistent, though slight, diffusion throughout Most dramas, of course, demand a greater degree of diffusion, while romantic or sentimental plots almost always call for the greatest degree of diffusion of all

Following the same line of reasoning, the average long-shot requires but little diffusion (unless the set is "spotty," and the diffusion is necessary to suppress elements likely to distract the attention from the essential action), while as the camera is brough closer and closer to the player, more and more diffusion is permissible Similarly, women require more diffusion than do men, and older players more, as a rule, than do younger ones

These facts, which are generally acknowledged, give rise, however, to abuses which are frequently serious I refer particularly to unnecessary diffusion and to inconsistent diffusion We have frequently seen pictures in which diffusion has been used in photographing feminine players—especially in close-ups—when there was no need for it, or at least, no need for so excessive a degree of diffusion Conversely, we have all seen shots in which actors have been photographed without diffusion when the requirements of good dramatic photography would have been better satisfied had at least a slight softness been used

But the gravest mistake is to make a sequence without observing the proper diffusion continuity I have in mind a sequence in a recent production, photographed by a representative artist, and co-starring two outstanding stars Dramatically, this sequence was one of the climactic points of the story, and gave both of the principals some of their biggest scenes Yet it had been made with no attempt at the observance of continuity of diffusion The opening shot was a long-shot, planting the room and the players This was nicely treated with an attractive, though very slight, diffusion The several scenes following were close-ups of the woman star reading some highly important lines As the action was of an emotional nature, these shots were made quite soft The next two shots were a medium-shot of the woman, with the man in the foreground, followed by a close-up of the man These were made with no diffusion—and struck the beholder like a blow (there are instances where this treatment is desirable, but this was not one of them) for it distrated the attention to the obvious change in quality and tonal value of the contrasting scenes Immediately followed another heavily diffused close-up of the woman, which lost its effectiveness by the jarring contrast in visual quality which it accentuated A proper understanding of diffusion continuity would have eliminated these visual contrasts and strengthened the sequence appreciably To treat soch a sequence properly, it would be the cinematographer's problem, first of all, to determine wheth-

Continued on next page

Continued from page 193

er the sequence, dramatically speaking, was the man's or the woman's. In this instance, it was the latter accordingly, he would have to modify his technique and use some diffusion on the man, so that the sequence might remain visually uniform, if necessary, he could light the man a bit harder than usual, to compensate. If, on the other hand, it were the man's sequence—that is, if his action, reaction and dialog took precedence—the best treatment would be to reduce the diffusion upon the woman—possibly compensating by softer lighting—and bring the sequence into visual co-ordination this way.

It would be hardly advisable—even if the space permitted—to discuss in great detail the individual media for producing diffused effects for every cinematographer already has his individual preferences, based on his individual requirements and technique, moreover, the conditions of each scene must in themselves dictate to a great extent the means used to produce any desired effect. Were I to state, for instance, that I preferred an Eastman ¼ 08, or an MP-A diffusion disc, a throng of my fellow-workers would protest that they were getting equally good results with, say a ½ Scheibe or Harrison diffuser. I can only say that the best policy is to learn definitely what each will do, and how it does it, then make your selection according to the work that must be done. In some instances, a simple softening of the image will be desired, in others, a spreading of the highlights, while in yet others an all but imperceptible greying of the image is wanted. The main thing is to diffuse intelligently, to maintain a definite continuity of diffusion throughout your production, and especially within each sequence, and to learn not to get caught at any artistic artifice—especially diffusion.

Stolen

● Stolen on Location in Pasadena — Leica Camera, Model D, No. 85940, Elmar F/3.5 lens, Everready case, 1 roll Dupont Superior film, Key No. OK38437, belongs to John Boyle. Anyone knowing anything about this camera communicate with John Boyle, care of American Cinematographer.

Practical Side of Laboratory Work

(Continued from Page 168)

trolled with great exactitude So successful has this system proven—and so amenable to individualized manipulation—that we have no intention of abandoning it, even though we have long used machines for the development of positive film

Moreover, in our plant we rely upon the test system more completely, I believe, than is the case in any other major laboratory It requires more work on the part of the laboratory personnel, it is true, but it produces more consistent results—and we have found it well worth while, economically speaking, due to its reduction of the possibility of retakes caused by mistakes in camerawork or processing

Accordingly, we require an unusual number of tests from the cameramen every set-up or change of lighting or set must invariably be accompanied by a laboratory test These tests are segregated, and put through our normal development before any of the body of the day's takes are allowed to go through From these tests we are enabled to judge with the utmost accuracy exactly the best treatment to give to the accompanying scenes In many instances, normal development would be adequate, it would produce a satisfactorily printable picture but by modifying the development either under or over normal we can produce a perfect picture rather than a merely adequate one Moreover, by this method we are enabled to detect—and compensate for—many minor differences in lighting, in the color-temperature of lights, and other minutiae which would otherwise pass unnoticed, since they cannot easily be detected by the men actually on the set.

Accordingly, we adhere rigidly to this system of exhaustive tests It is, of course, an easy matter, once the tests are properly segregated, to assemble all of the negative adapted to normal development, all that is to receive modified treatment, and send each lot through for its specified time Thereafter, the matter of making densitometric and cinex tests, printing, assembling, and inspecting is purely routine

Of importance scarcely secondary to that of flexibility of procedure and dependence upon laboratory tests is the vital question of rigid standardization of all methods and equipment where such standardization is possible The importance, for instance, of rigid standards of developer-strength and temperature is well known, as is the maintenance of a uniform temperature in all the solutions, and of controlled temperature and humidity in the drying process Scientific writers, such as Emery Huse, A S C, have also pointed out the value of continual sensitometric tests of all raw stock used, and of densitometric tests of all negative I feel it worth pointing out, however, that densitometric data alone is not always sufficient to guide the printing of the negative of a dramatic production, for such data alone will not always make allowance for light—and filter-efffects and similar special requirements To my mind the best method is to combine the scientifically accurate densitometric tests with visual tests, which—properly coordinated—can permit a combination of scientific accuracy with artistic conception

It is also well known that all testing

Continued on next page

Continuad from page 195

a uniformly high standard, and that, in equipment — sensitometers, densitometers and the like, must be maintained at by more than one individual is desirable. many instances, some duplication of tests

Likewise, uniformity of water-supply and chemical supplies have been discussed by other writers, too exhaustively to bear further repetition The same holds true of the importance of a constant, uniform supply of electric current In our establishment, the laboratory has its own power-line, which in turn drives specially controlled generators automatically maintained at an unwaveringly uniform output In the event of power failure, an adequate steam-turbine-driven generator is maintained, with an automatic control so effective that failure of the outside power-supply from any cause will bring the emergency-generator into operation in less than three seconds This emergency has seldom occurred, but these few rare instances have more than justified the expense of the installation

A further factor, not often mentioned, is absolute uniformity of projection facilities Many readers, I am sure, will have experienced at some time or other a greater or less difficulty due to a lack of such uniformity A given day's work may look satisfactory, for instance, in the inspection-rooms of the laboratory, and yet seem very poor when viewed in the studio's projection-rooms under less perfect conditions To obviate this, the laboratory of the Warner Brothers' studios is constantly checking the projection equipment of every installation in the firm's several studios This is done not only with routine mechanical and optical methods, but also by the daily projection of standard test-reels, both in the laboratory's projection-room and in the many projection-rooms throughout the studios By these methods, projectors, lenses, lamps, and screens are maintained at an unvarying, high standard The same, of course, applies to the sound-equipment, as well In fact, all of the methods outlined in this article are applied to the sound-track quite as much as they are to the picture-negative and prints

It is unfortunately impossible to discuss this subject in such detail as would be desirable, as the space available is limited The author hopes, none the less, that this brief outline may prove of value to some of its readers It must be reiterated, however, that this embodies but one man's opinion— methods which have been rawarded with a gratifying dagree of success, it is true, but which are by no means the only successful solution to the intricate problem of laboratory work It is to be hoped that other laboratory workers will utilize these columns for an exposition of their methods, for only by such interchange of thought can this industry progress to the attainment of its goal of perfection

Special Effect Use of Filters

(Continued from Page 170)

other rule When you increase the contrast of one color and reduce the contrast of the other color, you greatly increase the difference between the two colors, or greatly increase their relative contrast

If, however, the background in the illustrations were black instead of white, of course the contrast of the colors relative to the background would be just the reverse, but the contrast of the colors to each other would remain the same

Let's take as an instance a scene where the three primary colors are used, blue, green and red, and it is your desire to hold back the blue with a yellow filter, what will happen to the red and green? In the first place the contrast between the blue and the white will increase very rapidly as the density of the yellow filter is increased, however, the contrast of the red and green is not reduced as rapidly as though a red filter were used

New Method of Camera-Silencing

(Continued from Page 172)

magnifiers, etc., are used, if a Bell & Howell, the regular Bell & Howell focusing-tube and magnifiers

"Focusing is controlled by another lever at the rear of the camera, which moves the lens forward or back, and also operates an indicator on the graduated focusing-scale at the rear of the camera The regular focusing mount of the lens is unchanged, and may be used, as well When both scales are set at infinity, the lens may be focused accurately by either scale, while for inserts, etc , the two focusing movements may be used jointly, each extending the other's range When the image is focused, the controlling lever is turned back, the prism removed, and a light-trap in the focusing-tube closed The fact that the focusing is done through the photographing lens, in regular photographing position, and also that the lens moves only in a straight linear direction when it is focused, is of the utmost importance There is no obstruction between lens and film when in photographing position This arrangement allows for instantaneous, last-minute focus and alignment observations, even while the camera is running It is quite practical to keep the camera in focusing position, watching the image on the ground glass, while the motor is picking up speed, and to flip it back to shooting position when the 'speed' signal comes through

"Other useful features of the device are a mechanical anti-buckling clutch which automatically disconnects the motor-drive in case of trouble; a ratchet device on the drive-shaft, to provide against possible motor-reversal, accommodation for hand cranking, etc

"Used with a properly silent motor—such as the 48-cycle motors developed by John Arnold, A S C , at the Metro-Goldwyn-Mayer studios, a reconstruction-silenced camera is really silent, and, I believe, a marked improvement in every respect over the existing camera and blimp equipments generally used "

As stated earlier, the A C S 's tests of this apparatus are now under way, and the report of the tests will shortly appear in the American Cinematographer

Elect Fred M Hall

● Bell & Howell Company announce the election of Fred M Hall as Vice-President, in charge of their eastern offices, with headquarters in New York City

Mr Hall has been with the Bell & Howell Company five years, first as traveling sales representative and then as manager of the company's New York offices

DIRECTORY of DEALERS

Handling the American Cinematographer

ARIZONA

Phoenix Studio of Sound P. O Box 1671.
Tucson William M Dennis 22 United Bank Bldg
Nogales A W Lohn, 309 Morley Ave

ARKANSAS

Judsonia Lee s Novelty House

CALIFORNIA

Berkeley Berkeley Commercial Photo Co , 2515 Bancroft Way
Beverly Hills Bob Robinson Home Movies, 417 N Beverly Drive
Fresno Potter Drug Co 1112 Fulton Ave
Glendale Kug Art Photo Service, 205 So Brand Blvd
Hollywood Bell & Howell Co 716 North La-Brea Ave
Educational Projecto Film Co 1611 North Cahuenga Blvd
Hollywood Camera Exchange Ltd , 1600 N Cahuenga Blvd
Hollywood Citizen, 6366 Hollywood Blvd
Hollywood Movie Supply Co , 6038 Sunset Blvd
J V Merchant 6331 Hollywood Blvd
Morgan Camera Shop 6305 Sunset Blvd
Universal News Agency 1655 Las Palmas
Los Angeles California Camera Hospital 321 O T Johnson Bldg
Eastman Kodak Stores Inc , 643 So Hill Street
T Iwata Art Store 256 East First St
Lehnkering Pharmacy 1501 N Western Ave
B B Nichols 731 South Hope St
Tappenbeck & Culver 10958 Weyburn Ave Westwood Village
Victor Animatograph Corp , 650 So Grand Ave
Wilshire Personal Movies 3150 Wilshire Blvd
Monrovia Cliff s Photo Art Shop
North Hollywood Studio City Pharmacy 12051 Ventura Blvd
Oakland Adams & Co 380 14th St
Eastman Kodak Stores Inc 1918 Broadway
Pasadena The Flag Studio, 59 East Colorado St
Richard Fromme 965 S Fair Oaks
A C Vroman 329 East Colorado St
Richmond La Moine Drug Co 900 Macdonald Ave
Sacramento Frank McDougal 1017 10th St
San Bernardino Steele s Photo Service 370 D Street
San Diego Harold E Lutes 958 Fifth St
Ace Drug Co 820 W Washington St
Eastman Kodak Stores Inc 419 Broadway
San Francisco Eastman Kodak Stores, Inc , 216 Post St
Hirsch & Kaye 239 Grant Ave
San Francisco Camera Exchange 88 Third St
Schwabacher-Frey Stationery Co 735 Market St
Sherman Clay & Co Kearny & Sutter Sts
Trainer Parsons Optical Co 228 Post Street
San Jose Webb s Photo Supply Store 66 So First St
San Rafael Webb & Rogers 4th & B Sts
Santa Barbara J Walter Collinge 1127 State St
The Camera Shop 800 State St
Faulding s 623 State St
Stockton The Holden Drug Co Weber Ave & Sutter St
Logan Studios 20 N San Joaquin St

COLORADO

Denver Eastman Kodak Stores Inc 626 Sixteenth St
The May Co 16th & Champa Sts

CONNECTICUT

Bridgeport Harvey & Lewis Co 1148 Main St
Danbury Heim's Music Store Inc 221 Main Street
Hartford The D G Stoughton Co , 1255 S Whitney St
Watkins Bros , 241 Asylum St
Meriden Broderick & Curtin 42 E Main St
Middletown F B Fountain Co 483 Main St
New Haven Eugene F Clark Book Shop, 343 Elm St
Norwich Cranston Co 25 Broadway
Waterbury Curtis Art Co 65 W Main St

DELAWARE

New Castle E Challenger & Son
Wilmington Butler's Inc 415 Market St
Wilmington Elec Spec Co Inc 405 Delaware Ave

DISTRICT OF COLUMBIA

Washington Columbia Photo Supply Co Inc , 1424 New York Ave ,N W
Eastman Kodak Stores Inc 607 14th St N W
Robbins National Press Bldg , 529 14th St , N W

FLORIDA

Clearwater Courtesy Cigar Store Post Office Arcade
Jacksonville Eastman Kodak Stores Inc 129 W Adams St
Miami Miami Photo Supply Co 31 S E First Ave
St Petersburg Robinson s Camera Shop 410 Central Ave
Tampa Burgert Bros Inc 608 Madison St

GEORGIA

Atlanta Eastman Kodak Stores Inc 183 Peachtree St

IDAHO

Boise Ballou-Latimer Co , 9th & Idaho

ILLINOIS

Bloomington Hawkins Studio, 214 W Washington
Chicago Almer Coe & Co , 105 N Wabash Ave
Associated Film Libraries Inc Suite 224 190 N State St
Bass Camera Co 179 West Madison St
Central Camera Co 230 S Wabash Ave
Eastman Kodak Stores Inc 133 N Wabash Ave
Fair The Camera Dept , 7th Floor, State-Adams Dearborn Sts
Lake Shore Radio Co 3204-6 Broadway
Lyon & Healy Inc Wabash Ave at Jackson Blvd
Stanley Warren Co 918 Irving Park Blvd
Norman Willets Co 318 W Washington St
Wolik Camera Co 201 S Dearborn St
Evanston Almer Coe & Co 1645 Orrington Ave
Hattstrom & Sanders Inc 702 Church St
Galesburg Illinois Camera Shop 84 So Prairie St
Moline Seaholms Kodak Co 1507 Fifth Ave
Rockford Johnson Photo Shop 316 E State St
Springfield Camera Shop The 320 S Fifth St

INDIANA

Evansville Smith & Butterfield 310 Main St
Fort Wayne The Howard Co Inc 112 W Wayne St
Indianapolis L S Ayers & Co Dept 290
J West Washington St
South Bend Ault Camera Shop 122 S Main St
Terre Haute Snyder s Art Store 21 S 7th St

IOWA

Cedar Rapids Camera Shop 220 Third Ave
Davenport Eastman Kodak Stores Inc 318 Brady St
Des Moines Eastman Kodak Stores Inc 808 Locust St
Iowa City Rexall & Kodak Store 124 E College St
Sioux City Lynn's Photo Finishing Inc , 419 Pierce St
Eastman Kodak Stores Inc 608 Pierce St
Waterloo Macks Photo Shop

KANSAS

Topeka Hall Stationery Co 623 Kansas Ave
Wichita Jack Lewis Film Service 329 Sedgwick Building
Lawrence Photo Supply 149 N Lawrence Ave

KENTUCKY

Lexington W W Still 129 W Short St
Louisville A L Bollinger Drug Co Stilz & Frankfort Ave
Sutclitte Co , 225 S 4th Ave

LOUISIANA

Alexandria The Newcomb Studios 324 Johnston
Monroe Griffin Studios P O Box 681
New Orleans Eastman Kodak Stores Inc , 213 Baronne St

MAINE

Auburn Wells Sporting Goods Co , 52-54 Court St
Portland Bicknell Photo Service, 43 Exchange St

MARYLAND

Baltimore Eastman Kodak Stores Inc 309 N Charles St
Stark Films 219 W Centre St
Zepp Photo Supply Co 3044 Greenmount Ave
Hagerstown R M Hays & Bros , 2830 W Washington St

MASSACHUSETTS

Boston Eastman Kodak Stores Inc 38 Bromfield St
Boston Camera Exchange 44 Bromfield St
Cinecraft Co of New England 60 Boylston St
Ralph Harris Co 30 Bromfield St
Iver Johnson Sporting Goods Co 155 Washington St
Andrew J Lloyd Co 300 Washington St
Pathescope Co of the N E Inc 438 Stuart St
Pinkham & Smith Co 15 Bromfield St
Stillfilm Sales Co 40 Stuart St
Braintree Alves Photo Shop, 349 Washington St
Cambridge E M F Electrical Supply Co 430 Massachusetts Ave
Lowell Donaldson's 75 Merrimack St
Lynn Moehring s Inc 490 Washington St
New Bedford J Arnold Wright 7 S Sixth St
Newtonville Newton Photo Shop 92 Bower St
Pittsfield E C Kilian 411 North St
Salem Pitman Movie Service 45 Summit Ave
Springfield Harvey & Lewis Co 1503 Main St
J F Cheney & Co Inc 301 Bridge St
Worcester Harvey & Lewis Co 513 Main St

MICHIGAN

Detroit Crowley Milner & Co
Clark Cine-Service Rooms 203 204 Professional Bldg 10 Peterboro
Detroit Camera Shop 424 Grand River W
Eastman Kodak Stores Inc 1235 Washington Blvd
H C Film Service 12191 Iiene Ave
J L Hudson Co Dept 290
E B Meyrowitz Inc 1516 Washington Blvd
Flint Gardner Photo Service
Grand Rapids Camera Shop Stores Inc 56 Monroe Ave
Photo Service Shop 44 Monroe Ave
Jackson Royal Film Service 125 Michigan Ave W

Continued on page 200

Recent Patents Pertaining to Motion Pictures

Compiled by
Patent & Technical Information Service
1336 New York Avenue N. W.
Washington, D. C.

July 4, 1933

1,916,510. Electric System for Recording and Reproducing Sound. Edmund H. Hansen, New York, N. Y. The method of photographically recording sound on moving film which comprises simultaneously affecting the film with sound modulated light, and a second light source the intensity and frequency of which varies with the speed of an alternator driven by the same source that drives the film.

July 11, 1933

1,917,246. Production of Illusory Effects. Thomas H. Faris, Washington, D. C. In the production of illusory effects, a succession of screen members arranged in front to rear succession and each having openings for the passage of light rays, said members forming a group adapted to provide an audience image plane in presence of still or moving picture projection by a projecting apparatus serving as a source of portrayal on such plane, and means extending relatively angular to and in rear of the screen group for producing and directing ray emanations having their source in the projector rays and corresponding in tonal characteristics with those from the projecting apparatus but of less intensity to cause such portrayal to present simulated stereoscopic effects on such plane, said means being controlled as to activity by the light rays projected from said source of portrayal, said means including a plurality of pairs of reflecting members, one of the members of a pair having its surface in front to rear direction of the member extending angular to a line of incidence, the second member of the pair extending angular to the first member, the angularity of the two members being such as to permit access of source light rays to the reflecting surface of the second member only by reflection from the first member, and a screen element overlying the reflecting surface of the second member.

1,917,360. Film Printing. John G. Capstaff, Rochester, New York, assignor to Eastman Kodak Company, Rochester, N. Y. In a process of making a print on a continuous sensitive band from another band carrying images, the steps of exposing the first band to an actinic light from the second band, submitting the sensitive band to the action of a desensitizing bath, and then exposing the sensitive band area by area to a non-actinic light capable of lessening the effect of the first exposure, the intensity of the second exposure being controlled by the corresponding area of the image carrying band from which the first exposure was made.

Continued from page 198

Lansing Linn Camera Shop, 109 S Washington Ave
Saginaw Heavenrich Bros & Co, 301 Genesee

MINNESOTA

Duluth Eastman Kodak Stores Inc, 3 W Superior St
LeRoy Ivan E Meyers Home Movie Service, 215 W Main St
Minneapolis Eastman Kodak Stores, 112-116 So Fifth St
Gospeter's Blue Front 1006 Nicollet Ave
National Camera Exchange 5 South Fifth St
Owatonna B W Johnson Gift Shop, 130 W Bridge St
St Paul Eastman Kodak Stores, Inc Kodak Bldg 91 E Sixth St
H W Fisher Photographic Supplies 381 Minnesota St

MISSOURI

Kansas City Eastman Kodak Stores, Inc 916 Grand Ave
Eastman Kodak Stores Inc 1006 Main St
Hanley's Photo Shop, 116 E 10th St
Plaza Camera Co 218 Alameda Rd
St Louis Eastman Kodak Stores, Inc 1009 Olive St
Famous Barr Co, M P Dept 6th & Olive St
Geo D Fisher & Co 915 Locust St

MONTANA

Billings Midland Drug Co 23 N 27th St
Bozeman Alexander Art Co

NEBRASKA

Lincoln Eastman Kodak Stores Inc, 1217 O St
Eastman Kodak Stores Inc, 419 S 16th St
Omaha J G Kretschmer & Co 1617 Harney St

NEW HAMPSHIRE

Lebanon Photocraft Co
Newport K E Waldron, 1 A Main St

NEW JERSEY

Atlantic City Eastman Kodak Stores Inc 1735 Boardwalk
Bayonne Milton Mendelwager 192 Ave B
Cliffside Park Louis C Ghiosay 639 Anderson Ave
East Orange Edmund J Farlie Jr 45 N 19th St
Hawthorne Hawthorne Home Movie Service 52 MacFarlan Ave
Irvington Wolf Bros 1340 Springfield Ave
Jersey City, Levy's Sport Shop 149 Monticello Ave
Montclair Edward Madison Co, 42 Bloomfield Ave
Newark Anspach Bros 838 Broad St
Paterson Robt G Smith 40 Hamilton St
Sykes Drug Store, 179 Market St
Summit Eastman Bookshop, 380 Springfield Ave
Trenton Howard E Thompson 35 Newkirk Ave
Union City Heraco Exchange, Inc, 611 Bergenline Ave
West New York Rembrandt Studios, Inc 526A Bergenline Ave

NEW MEXICO

Santa Fe Capital Pharmacy, Inc

NEW YORK

Albany Albany Photo Supply Co, Inc, 204 Washington Ave
Binghamton A S Bump Co, Inc 180 Washington St
Brooklyn Geo J McFadden Inc, 202 Flatbush Ave
Abraham & Straus Inc Fulton & Hoyt Sts
J Navrilo 1757 Broadway
Buffalo Buffalo Photo Material Co 37 Niagara St
Hauser Bob Studio 11 West Tupper St
J F Adams Inc 459 Washington St
Nowak Optical Co
United Projector & Film Corp 228 Franklin St
Goshen T H Finan
Haverstraw E H Vandenburgh 3 Broadway
Hempstead Agnew's 47 Main St
Islip H L Terry & Sons
Ithaca Henry R Head 109 N Aurora St
Long Island City Leonard F Kleinfield 4202 Queen's Blvd
New Rochelle Artist's Photo Service 219 Hugenot St
New York City Wm C Cullen, 12 Maiden Lane
Adam Archinal Corp 305 W 56th St
Ambercrombie & Fitch, 45th & Madison Ave
Bloomingdale's 59th & Lexington Ave
J H Boozer 145 E 60th St
Columbus Photo Supply Co 146 Columbus Ave
Abe Cohen's Exchange, 120 Fulton St
Davega, Inc 111 East 42nd St
Davega Inc Empire State Building
Eastman Kodak Stores, Inc, 356 Madison Ave at 45th St
Fotoshop, Inc, 136 W 32nd St
H & D Folsom Arms Co, 314 Broadway
Gall & Lembke, Inc 7 East 48th St
Gillette Camera Stores Inc, 117 Park Ave
Gimbel Bros Dept 575 33rd St & Broadway
Joseph P Hackel, 1919 Chanin Bldg, 122 E 42nd St
Harry's Camera Exchange 317 W 50th St
Hecker's Camera Store, 1519 Amsterdam Ave
Herbert & Huesgen Co 18 E 42nd St
Lugene, Inc 600 Madison Ave, between 57th & 58th
Luma Camera Service Inc 302 W 34th St
Mogull Bros Electric Corp'n, 1944 Boston Road Bronx
Newman's Camera Shop 1197 Sixth Ave
New York Camera Exchange 109 Fulton St
Pago Inc 1095 Sixth Ave
Pickup & Brown, 368 Lexington Ave
Rab Sons 1373 Sixth Ave
Schoenig & Co, Inc, 8 East 42nd St
Sibley Lindsay & Curr Co
Frank Tanham & Co Inc 9 Church St
Times Building News Stand Inc Times Building
Willoughby's 110 112 114 West 32nd St
Richmond Hill Josephson Bros, 10902 Jamaica Ave
Rochester Marks & Fuller Inc 36 East Ave
Smith Surrey Inc, 129 Clinton Ave, South
Rome Fitchard Studio, 133-135 W Liberty St
Schenectady J T & D B Lyon, 236 State St
Syracuse Geo F Lindemer, 443 S Salina St
Francis Hendricks Co, Inc, 359 So Warren
Troy A M Knowlson & Co, 350 Broadway St
Utica Edwin A Hahn, 223-225 Columbia St
Yonkers W J Dolega, 242 Nepperham Ave

NORTH CAROLINA

Charlotte W I Van Ness & Co 213 N Tryon St

OHIO

Akron Pockrandt Photo Supply Co, 16 N Howard St
Canton Ralph Young News Agency
The Camera Shop, 531 Market Ave N
Cincinnati Eastman Kodak Stores, Inc, 27 West Fourth St
Huber Art Co, 124 Seventh St W
John L Huber Camera Shop 416½ Main St
L M Prince Co 108 W Fourth St
Cleveland The Home Movies Inc, 2025 Euclid Ave
Dodd Co, 652 Huron Road
Eastman Kodak Stores Inc 806 Huron Road 1862 E 6th St, 1915 E 9th St
Union Trust Bldg
Escar Motion Picture ervice, Inc, 10008 Carnegie Ave
Halle Bros Co 1228 Euclid Ave
Higbee Co 90 Public Square
Columbus Capitol Camera Co 7 E Gay St
Columbus Photo Supply, 62 E Gay St
Home Movies Co 234 S High St
Don McAllister Camera Co, 73 E State St
Dayton Dayton Camera Shop, 1 Third St Arcade
Middletown Lee R Chamberlain care Roy A White's Elec Shop 48 S Broad St
Portsmouth V E Fowler 824 Galia St
Salem Butcher's Studio 166 South Broadway
Steubenville Beall & Steele Drug Co 424 Market St
Toledo Gross Photo Supply Co 325 Superior St
Franklin Print & Eng Co 226 36 Huron St
Youngstown Eastman Kodak Stores, Inc, 7 Wick Ave
A C Saunders 177 Benita Ave
Zanesville Zulandt's Drug Store Widney cor Seventh & Main

OKLAHOMA

Oklahoma City H D Davis 522 N Broadway
Tulsa Camera Shoppe Inc and the Charles High Productions 1213 S Boulder Ave

OREGON

Lakeview Getty's Photo Studio I D D F Bldg, Center & Main Sts
Marshfield Mel's News Stand cor Broadway & Anderson
Pendleton J T Snelson 608 Gardner St
Portland Eastman Kodak Stores, Inc, 345 Washington St
Lipman-Wolfe & Co, Kodak Dept Fifth, Washington & Alder Sts
Meier & Frank Co Kodak Dept Fifth Sixth, Morrison & Alder Sts

PENNSYLVANIA

Allentown M S Young & Co, 736-40 Hamilton St
Easton Easton Sporting Goods Co 2nd and Northampton St
Erie Kelly Studios, 1026 28 Peach St
Harrisburg James Lett Co 225 N 2nd St
Johnstown Johnstown News Co, 115 Market St
Lancaster Pugh's Art Shoppe 33 W King St
Langhorne National Entertainment Service, 360 Bellevue Ave
Lebanon Harpel's 757-9 Cumberland St
Philadelphia Klein & Goodman, 18 South Tenth St
Camera Shop 51 N 52nd St
G P Darrow Co, Inc, 5623-5 Germantown Ave
Eastman Kodak Stores, Inc, 1020 Chestnut St
Home Movies Studio 20th & Chestnut Sts
MacCallum Stores 1600 Sansom St
M & H Sporting Goods Co 512 Market St
Newsreel Laboratory 1707 Sansom St
Strawbridge & Clothier, Dept 201 Market, Eighth & Filbert Sts
George W Tegan 420 E Mt Airy Ave
John Wanamaker's Motion Picture Dept No 1 Broad St
Williams, Brown & Earle, Inc 918 Chestnut St
Pittsburgh Eastman Kodak Stores, Inc, 606 Wood St
B K Elliott & Co, 126 - 6th St
Joseph Horne Co Magazine Dept
Kaufmann Dept Store, Inc Dept 62, Fifth Ave
Reading W F Drehs 541 Court St
Scranton Houser's 133 N Main Ave
Wallace & Cook, Inc, 2-5 N Washington Ave
Scranton Home Movies Library, 316 N. Washington Ave
Shamokin Jones Hardware Co 115 E Independence St
Wilkes Barre Ralph DeWitt, 2 South River St
Windber New Arts Feature 508 - 15th St
York Sweigart's Photo Service Shop 278 W Market St

RHODE ISLAND

Pawtucket Thomas N Simpson Broadway & Exchange St
Providence E P Anthony Inc 178 Angell St
Starkweather & Williams Inc 47 Exchange Pl
Westcott, Slade & Balcom Co 95-99 Empire St

TENNESSEE

Jackson Southern Pictures Corp
Knoxville Jim Thompson Co, 415 W Church St
Memphis Memphis Photo Supply Co, 122 Union Ave
Nashville Geo C Dury Co 420 Union St

TEXAS

Abilene W C Cosby, 249 Pine St
Dallas Jamieson Film Laboratories 2212 Live Oak St
E G Marlow Co 1610 Main St
Fort Worth The Camera Shop Inc, 113 W Sixth St
Chas G Lord Optical Co, 704 Main St
Houston Star Elec & Eng Co Inc 613 Fannin St
San Antonio Fox Co 209 Alamo Plaza

UTAH

Salt Lake City Eastman Kodak Stores, Inc 315 S Main St

VIRGINIA

Norfolk G L Hall Optical Co, 257 Granby St
Richmond G L Hall Optical Co, 418 E Grace St

VERMONT

Burlington G W La Pierre's 71 Church St

WASHINGTON

Bellingham Clyde Banks 119 W Holly St

Continued on Page 202

1,918,102 Film Sound Record Apparatus Clarence W Hewlett, Schenectady, N Y, assignor to General Electric Company, New York Film sound record apparatus comprising film driving means, optical means for directing a narrow light beam on a film driven thereby, a support for the optical means mounted for movement transversely of the film, electromagnetic means for shifting said support to each of a plurality of predetermined positions and contact means in circuit with said electromagnetic means adapted to be bridged by a conducting member on said film

1,918,488 Apparatus for Projecting Motion Pictures Gerald F Rackett, Los Angeles, Calif, assignor to Association of Motion Picture Producers, Inc, Los Angeles, Calif The combination comprising a lens, a pair of small light refracting prisms positioned in operative relation with the lens, the prisms being normally positioned at an angle to one another with the apex of the acute angle of one prism being positioned adjacent to a base angle of the other prism, pivotal means mounting the adjacent ends of the prisms and means for moving the prisms about their pivots to increase or decrease the angle between the prisms.

July 25, 1933

1,919,364 Method of and Means for Scoring Motion Pictures William E Garity, Los Angeles, Calif, assignor to Roy O Disney, Los Angeles, Calif A method of producing accurately timed sound records for use with motion picture films, comprising aurally imparting time signals to a sound source without causing said signals to be audible to observers, said signals being timed in accordance with the normal speed of projection of the film for which the sound record is to be made, and recording sounds produced by said sound source in response to said signals

1,919,673. Photographic Relief Leonard T Troland and Roland D Eaton, Cambridge, Mass, assignors by mesne assignments, to Technicolor, Inc, New York, N Y The method of controlling the dye-absorbing properties of a photographic film which comprises treating the latent image of a silver haloid emulsion in a hardening developing solution, oxidizing the solution remaining in the gelatine and not consumed for development, in a separate bath to a predetermined degree, thereby regulating the thickness of a layer of relatively non-dye-absorbing gelatine produced by said oxidation process and filling the interstices between image forming dye-absorbent gelatine particles produced by the developing solution, in relation to the depth of the layer formed by said dye-absorbent particles

Pullman Graves Studio
Seattle Anderson Supply Co 111 Cherry St
Eastman Kodak Stores, Inc 1415 - 4th Ave
Lowman & Hanford Co 1514 - 3rd Ave
Spokane John W Graham & Co, Dept C, 707 Sprague Ave
Joyner Drug Co, Howard & Riverside Ave
Tacoma Eastman Kodak Stores Inc 910 Broadway
Walla Walla Book Nook Drug & Stationery Store

WEST VIRGINIA
Wheeling Twelfth St Garage 81 - 12th St

WISCONSIN
Fond du Lac Huber Bros 36 S Main St
La Crosse Moen Photo Service 313 Main St
Madison Photoart House 212 State St
Milwaukee Eastman Kodak Stores, Inc 737 N Milwaukee St
Boston Store, Wisconsin Ave & 4th St
W E Brown, 327 W National Ave
Gimbel Bros E Wisconsin & N Plankington
Roa Meuer The 226 West Wells St
Phillips Jakoubek's', 132 N Lake Ave
Racine Photo Crafts Shop 526 College Ave

AUSTRALIA
Melbourne McGills Agency, 179-218 Elizabeth St.

CHINA
Canton International Book Co, 269 North Wing Hon Road

ENGLAND
London J H Dallmeyer Ltd 31 Mortimer St and Oxford St W 1

HAWAII
Honolulu Eastman Kodak Stores 1059 Fort St

INDIA
Bombay Continental Photo Stores 255 Hornby Road
P C Eranee Sons Albert Bldgs, Hornby Road
Calcutta Photographic Stores & Agency Co, 154 Dhuramtolla St
M L Shaw 5/1 Dhuramtolla St
Lucknow Lucknow Commercial Co 25 Aminabad Park

MEXICO
American Photo Supply Co S A, Av F 1, Madero, 43, Mexico D F

POLAND
Warsaw Polska Agencia Prasy Filmowej Wspolna 35.

SOUTH AMERICA
Buenos Aires Argentine Rep Casa America Ltda S A Avenda de Mayo 959

Davidge Plans New Laboratory and Finance Company

● According to current reports, Roy Davidge will enlarge his Hollywood laboratory activities to include the financing of independent productions and the construction of a new plant at Bronson and Santa Monica Boulevard, Hollywood The new organization will be known as Roy Davidge, Inc, and has Davidge as president, L E Davidge, vice-president, Earl Rodman, secretary, and John Jasper, treasurer and business manager

Davidge's new film processing system called the "wheel and blanket" method, has been perfected by him, according to announcements, after four years of research and experimentation It is claimed the method is fully patented and will be installed in the new plant

A major producing company is claimed to be negotiating with the new Davidge Company to give that organization its work It is also asserted a tie-up is being effected with a New York concern to handle the release printing

Hal Hopper, of Cinema Mercantile, who has been a figure in production financing, is said to be a stockholder of this newly-formed company This, together with the fact that Phil Goldstone, who has been financing independents and who has had his work done by Davidge, would indicate a formidable set-up for this newly-formed company

16 mm. for Closed Theatres

● According to reports emanating from New York City, there is in formation a corporation for the furnishing of 16 mm sound pictures to approximately 2,000 theatres now closed

The plan calls for portable projectors with a complete program on a 4,000-foot reel, consisting of feature, cartoon and travelogue It is anticipated a show of this nature will call for a rental of from $10 to $20

It is the contention that these 16 mm programs will not interfere with the professional sized pictures and that negotiations are going on with Paramount and Fox for releases

New DeVry Sound Camera

● Herman A DeVry, well known as the head of H A DeVry, Inc, and designer of the recently announced DeVry light-weight sound-camera, has just announced a new model of his already popular equipment, which is adapted to either single-system or double-system sound-recording, and also for bi-pack color photography with sound Only a few pounds, according to Mr DeVry, have been added to the weight of the original outfit, which, it will be remembered, tipped the scales at less than 150 pounds complete The slight added weight is said to be due to the larger bi-pack magazines or the 1000-foot magazines used when making black-and-white sound pictures

Classified Advertising

Rates: Four cents a word Minimum charge, one dollar per insertion.

FOR RENT—MISCELLANEOUS

FOR RENT—Mitchell Motor 25 M M Lenses 1000 feet Mitchell Magazines Baby Tripod J R Lockwood Glendale Phone Douglas 3361-W

FOR RENT—Mitchell high speed gear box complete Pliny Horne 1318 N Stanley HO-7682 or HO 9431

FOR SALE OR RENT

FOR SALE OR RENT—Mitchell and Bell & Howell silenced cameras follow focus Pan lenses free head, corrected new aperture Akeley, DeBrie Pathe Universal Prevost, Willart DeVry Eyemo Sept Leica Motors, Printers, lighting equipment Also every variety of 16mm and still cameras and projectors Everything photographic bought, sold rented and repaired Send for our bargain catalogue Open 8 A M to 10 P M Hollywood Camera Exchange 1600 Cahuenga Blvd Phone HO-3651 Cable address Hocamex

FOR RENT—CAMERAS

FOR RENT—Thoroughly silenced Mitchell cameras Pan Astro lenses follow focus J R Lockwood, Glendale Douglas 3361-W

FOR RENT—Mitchell high speed camera with latest 40 50 and 75 mm Pan-Astro lenses 1000 ft magazines, loose head tripod Pliny Horne, 1318 N Stanley HO-7682 or HO 9431

FOR SALE—CAMERAS

FOR SALE—Bell & Howell adapter for Mitchell Tripod head, 40 50-75-M M Astro lenses mounted and unmounted Mitchell tripod head Mitchell matte box J R Lockwood, 523 N Orange St, Glendale Calif Douglas 3361-W

FOR SALE OR TRADE Pathe Field Camera electrically equipped 400 ft inside magazines 2 in Kline, 3 in Goerz hypar, outside parts chromium plated, Tripod, head used as regular or friction Like new With trunk Photo on request $225 or best offer P O Box 1457 Tampa Fla

FOR SALE—CAMERAS

FOR SALE—35 MM Pathe Studio Camera, 1 f 3 5 Krauss Tessar carrying case three magazines $100 Universal Tripod with carrying-case $75 Box S American Cinematographer 1222 Guaranty Bldg, Hollywood

USED BARGAINS—Bell & Howell 70DA Cooke F1 8 with hand crank $195 35mm 7-inch projector lens $10 00 B & H 57 G projector with case $75 00 Trades accepted Library Film 2c foot 16mm Send for 50 page bargain catalogue Mogull Brothers 1944 F Boston Road New York City

AKELEY CAMERA—Practically new rebuilt for color, 40mm and 50mm lenses 10 magazines cases tripod etc Cost $5 000—will sell for $1 250 Box R W S care American Cinematographer

You want The Cinematographic Annual ●

FOR SALE—MISCELLANEOUS

FOR SALE—Ica "Monopol' semi-portable 35 MM projector, complete with carrying-cases and extra carbons Box S care American Cinematographer

FOR SALE—Special complete 16 mm editor with geared rewinds, magnifier and splicer, $4 50 plus postage Money refunded if not satisfactory FOTOSHOP 136 West 32nd St, New York City

WANTED

WANTED—16 mm Projector Camara Leica and other equipment Must be in good condition and cheap T E Rogers, 551 S Kingsley Los Angeles Calif

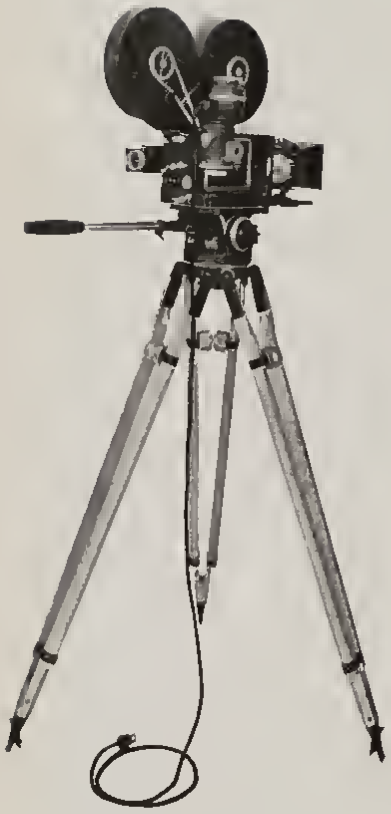
WANTED—DeVry 35mm Hand-camera double-claw movement Must be cheap and in good condition Box G, care American Cinematographer

WANTED—Motor adapter J R Lockwood, Glendale Douglas 3361-W

WANTED—Mitchell High Speed Silent Camera box only without equipment Must be cheap for cash Box 140 American Cinematographer

WANTED—"Leica' enlarger must be in good condition and cheap Box H R care American Cinematographer

544 pages of valuable information ●



Back of the

Mitchell Camera

is a

Complete and Efficient

Engineering . . .

Research . . .

and Service

Organization

MITCHELL CAMERA CORPORATION

665 N. ROBERTSON BOULEVARD

WEST HOLLYWOOD, CALIF.

Cable Address "MITCAMO"

Phone OXford 1051